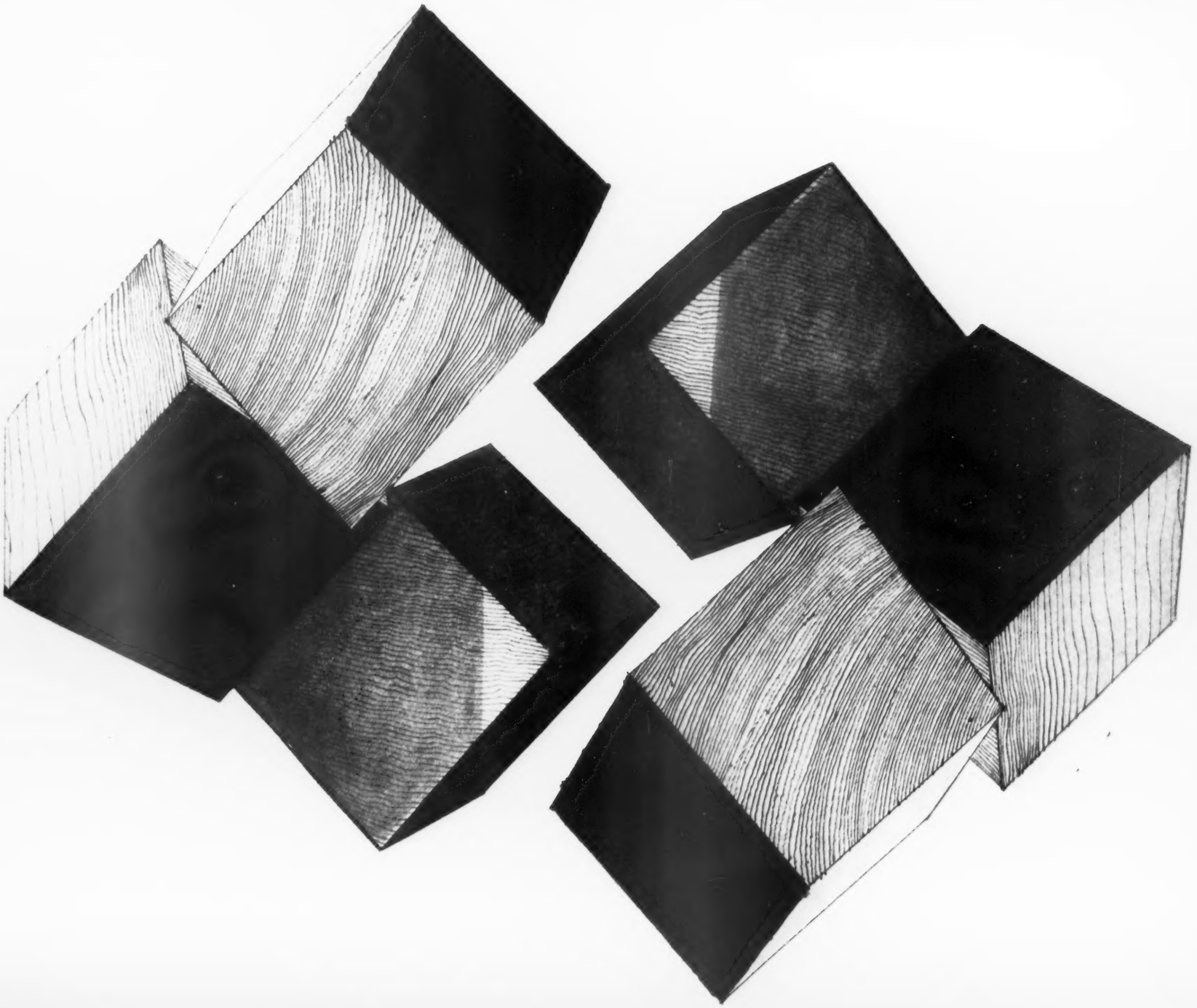
NOVEMBER 1960 VOLUME 2 NUMBER 11

architectural & engineering NEWS



ARCHITECTURAL & ENGINEERING NEWS
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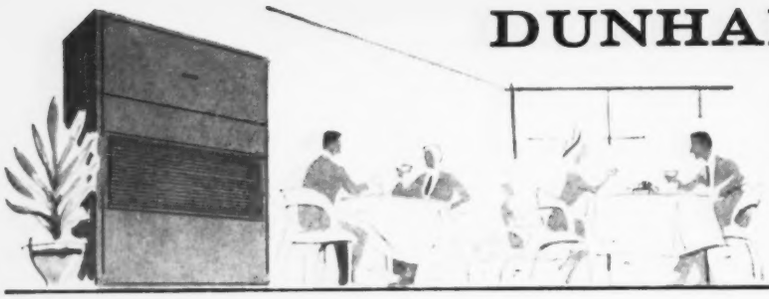

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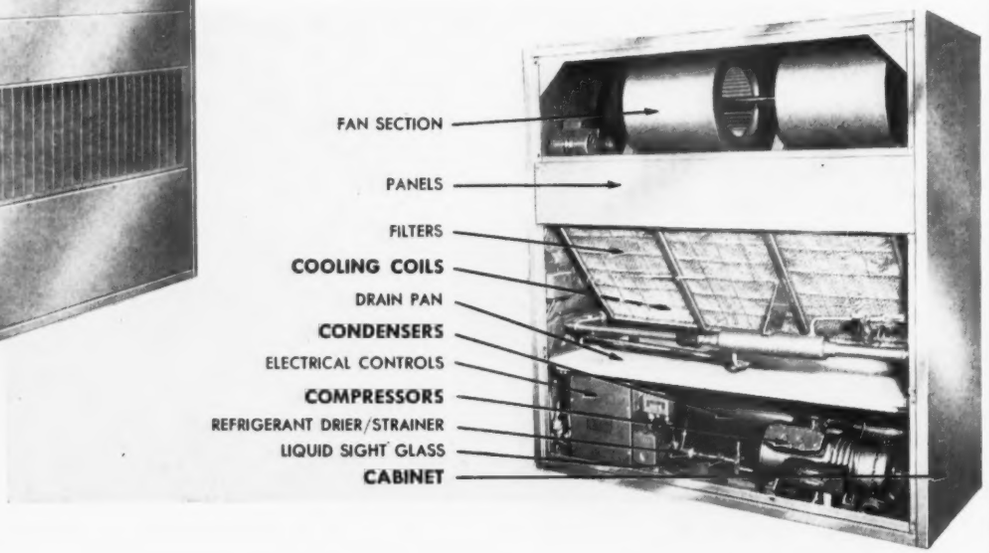

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BPA

This issue, dealing with wood technology, is given playful graphic treatment by Tony Palladino in his use of wood blocks for the cover design. Readers in the New York area may see a comprehensive exhibit by Tony Palladino and his professional associate, R. O. Blechman, of their work at the School of Visual Arts, 209 East 23rd St., N.Y.C., during November.

11

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56 Editorial: once over lightly

4 Forecast: AGC construction outlook

13 Structural sandwich design criteria

18 New clear spans and floor component systems

20 Component building system

24 Aspects of NAHB research house

26 Technology in wood

2 Gazette

5 A/E news

28 Products, equipment, materials

46 Preview: Bethel Evangelical Lutheran Church

47 Literature

53 Digest: proposed standard for insulation

55 Names: Edmund Randolph Purves, FAIA
William H. Scheick, AIA

54 Books: An Investigation of the Small House

59 Calendar

58 Index to advertisers

Readers service cards

facing pages 1 and 58

GAZETTE

Dr. Hubert R. Snoke, Assistant Chief of the Building Technology Division and Chief of the Floor, Roof and Wall Coverings Section of the National Bureau of Standards has retired from active service after more than 40 years with the Bureau.

Stephen D. Bechtel, President of Bechtel Corporation, San Francisco, has been selected as the 1961 recipient of the John Fritz Medal, which is awarded annually for notable scientific or industrial achievement in the engineering profession.

Two prominent members of the Consulting Engineers Council have been named to important national committees by the U.S. Chamber of Commerce. A.H. "Red" Motley, Chamber President, appointed Leonard K. Crawford, consulting civil engineer of Springfield, Ill., and Ralph M. Westcott, Los Angeles consulting mechanical engineer. Crawford will serve on the Transportation and Communications Committee, and Westcott on the Government Operations and Expenditures Committee.

Hueston M. Smith, President of the Consulting Engineers Council, and Alger Malo, President-elect of the Institute of Traffic Engineers, were called on recently by the U.S. Junior Chamber of Commerce to help judge the Jaycees' 1959-60 Community Development contest. The winners were the Jaycee chapters at Downers Grove, Ill., $1,500 first place; Enfield, Conn., $1,000 second place; and Chattanooga, Tenn., $500 third place. Nine members of the Professional Council on Community Development were commended by the Junior Chamber. They were: Hueston M. Smith, CEC; Charles Blessing, AIP; Dennis O'Harrow, ASPO; J.N. Richards, AIA; A.E. Munson, ASLA; J.C. Kohl, and John Nolen Jr., ASCE; Alger Malo, ITE; Harold Miller, ASP&DA; and John Whisman, AP&CA.

Dr. Augustus B. Kinzel, Chairman of the Division of Engineering and Industrial Research, National Academy of Sciences-National Research Council, has announced the appointment of Mr. Harry B. Zackrison, Sr., Supervisory General Engineer, Office of the Chief of Engineers, Department of the Army, as 1960-1961 chairman of the Building Research Advisory Board, a unit of the Division of Engineering and Industrial Research.

Paul John Grayson, AIA, has been appointed Project Architect for the Architectural Department of Donald Deskey Associates, Inc., New York City.

Skidmore, Owings & Merrill, architects, have announced the election of Roy O. Allen, Jr., Edward C. Bassett and Bruce J. Graham as general partners of the firm. SOM have offices in New York, Chicago, San Francisco and Portland, Ore.

A NEW CEILING FOR TODAY'S NEWEST BUILDINGS

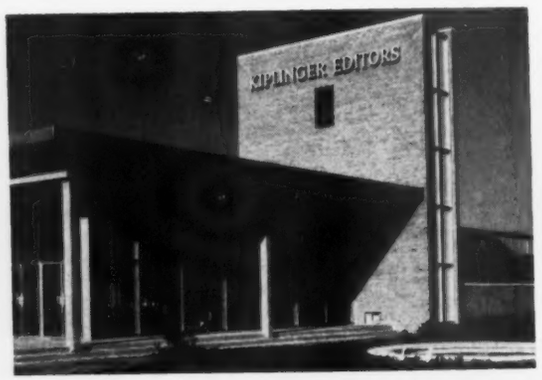
Why Armstrong Acoustical Fire Guard was chosen for the new Kiplinger Letters Building

This modern building, like many others all over the country, has an Armstrong Acoustical Fire Guard ceiling. Read why.

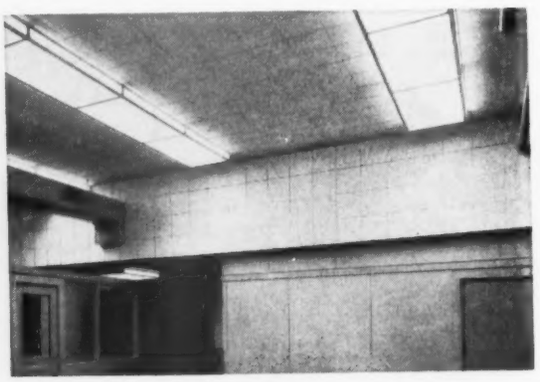
"NOTHING but the best." That's what the client for the Kiplinger Letters Building wanted. That's what he got.

The building's interior has an Armstrong Acoustical Fire Guard ceiling. The smooth, free-flowing appearance of Classic Acoustical Fire Guard, plus its high light reflectance, was just what the client and architect wanted.

They got something else, too. Long-term savings. Acoustical Fire Guard can be maintained easily. It



The structure of the Kiplinger Letters Building is steel frame and concrete with face brick exterior walls backed up with concrete masonry units. Built-up roofs cover the structure.



Color schemes were coordinated by an interior decorator. The Acoustical Fire Guard ceiling's white surface reflects light evenly, without glare. Its light reflectance is "a" (over 75%).

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The Kiplinger Letters Building in Prince Georges County, Maryland, has an Armstrong Acoustical Fire Guard ceiling. Architects were Chatelain, Gauger and Nolan, Washington.

can be washed when necessary—and even repainted several times without impairing its excellent acoustical properties.

No costly intermediate protection

Acoustical Fire Guard eliminates the need for intermediate fire protection between a suspended acoustical ceiling and steel structural members. There is no reason to pay for extra concrete, lath, plaster, spray-on insulation—or water. Labor costs are reduced correspondingly. One less operation is needed. Savings of up to 30¢ per square foot are possible, depending upon locale, building design, and degree of fire protection required.

Save up to six weeks' time

Acoustical Fire Guard is installed by a completely "dry" method. There are no long delays of the type caused by "wet" operations. No extra moisture is introduced into the building. Other building trades don't have to mark time waiting for the interior to dry. Acoustical Fire Guard can save up to six weeks.

Time-design ratings

There is still another reason why Acoustical Fire Guard was chosen for the Kiplinger Letters Building. This is the first acoustical tile ceiling that has been tested and given official fire-retardant time-design ratings by Underwriters' Laboratories, Inc. It has received one- to four-hour ratings.

And even where time-design-rated construction is not required by local codes, Acoustical Fire Guard provides tested fire protection and a safer building at little—if any—extra cost.

To learn more about Armstrong Acoustical Fire Guard, call your Armstrong acoustical contractor (he's in the Yellow Pages under "Acoustical Ceilings") or your nearest Armstrong district office.

And for an interesting booklet with complete information about Acoustical Fire Guard ceilings, write to Armstrong Cork Company, 4211 Ryman St., Lancaster, Pennsylvania.

Armstrong ACOUSTICAL CEILINGS

1860-1960 Beginning our second century of progress

GAZETTE

H. E. Bovay, Jr., Partner of H. E. Bovay, Jr., Consulting Engineers, announced that George C. Love has been transferred from Houston to the firm's Richland, Wash., office, replacing Robert O. Grimes as Chief Engineer. Mr. Grimes now assumes his former position as Associate of the Bovay Houston organization, and has resumed his duties as Senior Project Engineer. He will also serve as Assistant Projects Manager.

Robert F. Fisher, AIA, has been elected Chairman of the Grants Pass, Ore. City Planning Commission. He has served as a planning commissioner and as chairman of the rezoning committee since 1954.

Appointment of Charles Luckman, AIA, of Los Angeles as a member of the newly created Board of Trustees of the State Colleges, has been announced by Calif. Governor Edmund G. Brown.

Thomas A. Marshall, Jr., has been elected Executive Secretary of the American Society for Testing Materials. Also elected as ASTM officers are: Fred F. Van Atta, treasurer; Robert J. Painter, Consultant to the Executive Secretary; Raymond E. Hess, Associate Executive Secretary and Editor-in-Chief.

Nine new officers of the American Society of Civil Engineers for 1961, headed by President-elect Glenn W. Holcomb, of Corvallis, Ore., have been announced. Donald H. Mattern, Knoxville, Tenn., Vice President for ASCE's Zone 11; William J. Hedley, St. Louis, Mo., Vice President Zone III, Roger H. Gilman, Plainfield, N. J. Director for District 1; Henry W. Buck, Hartford, Conn., Director District 2; Earle T. Andrews, Berkeley Springs, W. Va., District 6; John B. Scalzi, Cleveland, O. District 9; John D. Watson, Greensboro, N. C., District 10; and Harmer E. Davis, Berkeley, Calif., District 11.

L. Bancel LaFarge, AIA, of the firm LaFarge, Knox & Murphy, has been named chairman of the Architect's Division of the New York Arthritis and Rheumatism Foundation.

office announcements

A change in name to The Cerny Associates, Inc., from Thorshov & Cerny, Inc., has been announced by officers of the Twin City architectural and engineering firm.

Samuel E. Lunden and Joseph L. Johnson have announced their partnership in the firm to be known as Samuel E. Lunden, FAIA, and Joseph L. Johnson, AIA, Architects and Planners, 548 South Spring St., Los Angeles 13, Calif.

Robert W. Cutler, FAIA, a partner in the firm of Skidmore, Owings and Merrill, has been named General Chairman of the 1960 Family Fund appeal of the Community Service Society.

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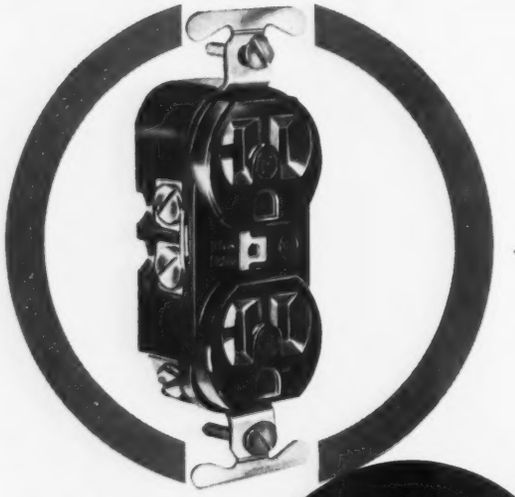
NEW CIRCLE F 20-AMP "U"-GROUND DEVICES



. . . Section 220-3 (b) of the 1959 National Electrical Code states . . .

"For the small appliance load in kitchen, laundry, pantry, dining room and breakfast room of dwelling occupancies, (1) 2 or more 20-ampere branch circuits in addition to the branch circuits specified in paragraph 220-3 (a) shall be provided for all receptacle outlets (other than outlets for clocks) in these rooms, and such circuits shall have no other outlets."

Designed to provide full compliance with the revised Code, Circle F's *new* No. 2532 does much more! It becomes a "universal" outlet! It accommodates appliances, heavy-duty portable tools, business machines, etc., having substantial energy requirements, where the new 20 A.-125 V. plug cap (No. 2528) is necessary. It also accommodates 15 A.-125 V. 3 wire U-ground and standard parallel blade caps. One outlet for all! Circle F's quality is tops and the price is right. Contact your Circle F representative for complete details.

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FORECAST

OUTLOOK FOR CONSTRUCTION FOR REMAINDER OF 1960

This report is based on a survey which was conducted in late September by the Associated General Contractors of America among its governing and advisory board members, numbering some 150, and the managers of 125 AGC chapters.

A nationwide survey of prospects for construction for the balance of 1960 indicates that most general contractors believe normal conditions will prevail. However, replies varied considerably among the different regions of the country and among the major categories of construction.

In the first eight months of the year, according to government estimates, the volume of new construction was 3 per cent below the record level of the corresponding months of last year. If the expectations indicated by the AGC survey are borne out, the total value of new construction put in place in 1960 should be close to the all-time high mark of $56.1 billion set in 1959, and the second highest in history.

The revised government outlook for construction this year, announced in August, anticipated a total volume of $55.8 billion, a decline of less than one half of 1 per cent from 1959. The results of the AGC survey tend to support this.

The outlook for a sustained level of construction activity in the next several months at close to last year's record volume is encouraging for business as a whole, since construction is the nation's largest single industry. It accounts each year for about 15 per cent of the gross national product, about 15 per cent of total employment, directly and indirectly, and is the largest user of materials.

Recipients of the AGC questionnaire were asked whether prospects for the remainder of 1960 in their areas were above normal, normal, or below normal, in each of the categories of construction with which they were familiar. The results by categories are shown in the Chart I.

CHART I: PROSPECTS BY CATEGORY OF CONSTRUCTION

Type of construction	Above Normal	Normal	Below Normal
Building	27	54	62
Highway-airport	33	56	49
Heavy-municipal-utility	21	67	46
All categories combined	81	177	157

Thus the largest number of replies anticipate normal conditions in the construction industry for the rest of the year, and the total of respondents expecting activity to be either normal or above normal is nearly twice as large as the number forecasting below normal operations. The survey indicates that the outlook is best for heavy construction, next best for highway-airport work, and least favorable for building activity.

The survey also asked for expectations on material and labor costs in the next six months. The replies indicate a strong belief that material costs will remain stable, while there is an almost even division between those who expect labor costs to rise in the next six months and those who think they will remain stable. The results on these questions are shown in Chart II.

CHART II: MATERIAL AND LABOR COSTS NEXT SIX MONTHS

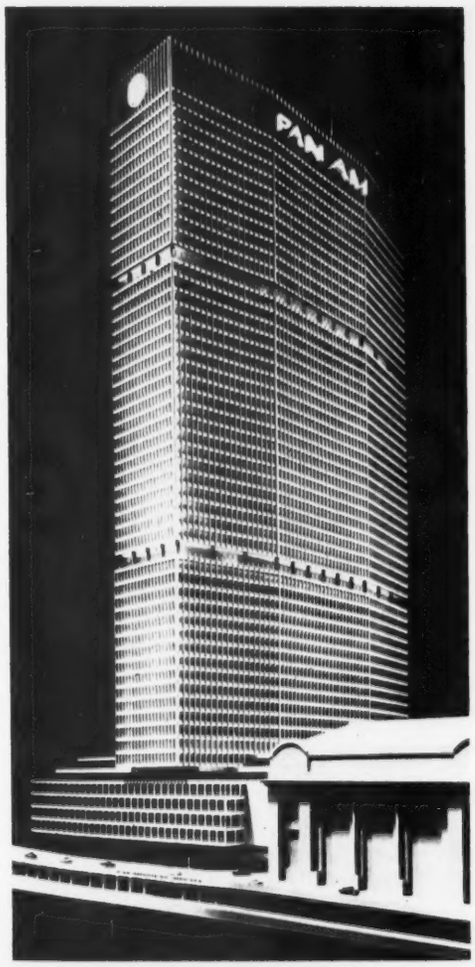
Type of costs	Increase	Remain stable	Decline
Material	46	122	3
Labor	92	79	0

By regions, the replies to the questionnaire on the outlook for construction activity as a whole show the results indicated in Chart III.

CHART III: OUTLOOK FOR CONSTRUCTION AS WHOLE BY REGIONS

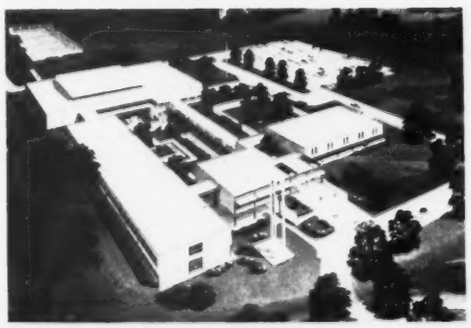
Region	Above Normal	Normal	Below Normal
New England	4	13	9
Middle Atlantic	8	11	19
South	19	50	35
Middle West	29	47	37
Southwest	9	23	24
Far West	12	33	33

A|E NEWS



As a result of leasing agreements, the world's largest commercial office building, now under construction in Manhattan, will be known as the Pan Am Building.

Place Ville-Marie, a complex of offices, stores and an underground garage is now under construction in Montreal. Including a 42-story office tower, the development provides over 2,300,000 square feet of rentable space. Architects: I. M. Pei & Associates, New York.



A new $2,000,000 Mt. St. Joseph's Academy for Girls will feature a sixty-foot high bell tower, gym stands controlled by push buttons, and a library with a balcony view of the valley below. Architects: Nolen and Swinburne, Philadelphia.

AIA portfolio

Edmund R. Purves, FAIA, Executive Director of *The American Institute of Architects* since 1949 and a member of the Institute staff since 1941, has resigned as staff chief of the national professional society effective December 31. He will be succeeded by William H. Scheick, AIA, Vice President of the Timber Engineering Co. and former Executive Director of the *Building Research Institute, National Academy of Sciences.* (*A complete story of this event is carried in Names, page 55, this issue.*)

The AIA announced that it will receive nominations for the fifth annual $25,000 R.S. Reynolds Memorial Award, largest award in architecture. Prime consideration is given the creative value of the architect's contribution to the use of aluminum and its potential value to the architecture of our times. An architect may be nominated by anyone, including himself or his firm. This year, for the first time, the AIA is encouraging newspaper, magazine, radio and television editors to nominate local architects whose buildings are eligible. To be eligible, the building should have been completed between January 1, 1958 and January 1, 1961—although the AIA Jury may consider earlier work if it desires. The designer should have used aluminum in a creative manner. Nominations should include: the architect's name and address, the name and location of the structure, and the date it was completed—and the name and address of the person making the nomination. Nominations should be sent to: The Reynolds Award, AIA, 1735 New York Ave., N.W., Washington 6, D.C.

Entries are now also being received from architect-builder teams throughout the U.S. for the Annual *Award of Honor,* the only prize offered jointly by the AIA and the *National Assn. of Home Builders.* According to AIA chairman Edward H. Fickett, AIA, the award will go to the architect and builder who, combining talents, have contributed most toward better communities and homes for Americans. Entrants should clearly and concisely state the method of collaboration, its results and its contribution to land planning, building techniques and architect-builder relationships. Selection will be based to a large degree on these factors. The award competition is open to any team which has cooperated on a project completed within the last five years.

The AIA and the *Associated General Contractors of America* (*AGC*) have reaffirmed their traditional views regarding the respective roles of architects and the general contractors in the construction industry.

According to the AIA, its current efforts to explore means by which its members can increase the scope of their service will not affect—are not intended to affect—the role of the general contractor or the present system of building contract administration.

This was the first meeting (September 27, Las Vegas, Nev.) between AIA and AGC officials since the AIA reorganized many of its administrative procedures to enable the Institute to act more effectively for the architectural profession.

In the reorganization program, the AIA recommended the establishment of a new committee known as the AIA-AGC Liaison Committee, replacing the AIA-AGC Joint Cooperative Committee. The AIA stated that the new name more truly reflected the scope and responsibilities of the joint committee, but that the work and activities would continue as in the past.

Coupled with the AIA internal reorganization, a special committee of the AIA is re-evaluating the architect's professional role in the industry with special attention to "package deals" and similar problems.

(Continued on page 6)

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The new Dor-O-Matic Hydra-Cushion concealed-in-floor door control gives maximum protection to doors and frames. Stops and overhead holders which cause damaging shock when doors are banged open are unnecessary! Now doors are gently cushioned to a stop by an adjustable hydraulic action as they approach open position. No need for expensive, heavy-duty anchor or pivot reinforced hinges because the Dor-O-Matic Hydra-Cushion eliminates the damaging stresses transferred to hinges and door frames when doors are brought to a smashing halt. Positive built-in back stop . . . and built-in hold open . . . eliminate door or floor applied stop devices.

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A|E NEWS

(Continued from page 5)

For the past two years, a special AIA Committee on the Profession has been considering the problems in the light of technical advances, industrial growth, changes in contract procedures, and economic developments. The committee published "A Report on Your Profession" in the June issue of *The AIA Journal* and AIA and AGC officials at the Las Vegas meeting agreed that parts of the report, including the description of architects as "master builders," were subject to misinterpretation.

In a clarifying statement, the AIA stated that it neither recommends that architects replace general contractors nor endorse separate contracts.

BRI meeting

Admittedly the biggest factor in reducing the cost of our buildings, the use of pre-assembled large building components, to replace slow and costly-on-site construction, is making advances throughout the building industry. To bring together all of the current experience with components, and to get the viewpoint of architects, home builders, contractors, building owners and operators, building code officials and labor, the *Building Research Institute* held its Fall Conference, November 15-17 at the Shoreham Hotel in Washington, D. C.

Speakers in each of the categories named above took the stand to express the attitude of their particular groups to the increased use of preassembled building components of all types and varieties. The principles of preassembled component construction for residential and non-residential buildings, were set forth by home builders, architects, component manufacturers, prefabricators and materials dealers, and a number of case studies of the actual use of large components, their cost, performance, appearance and durability, and problems encountered with their use was described.

Architects, contractors, and building industry producers can now anticipate a forthcoming publication designed to assist in the effective use of modular dimensioning in architecture. This book, made possible by a grant from The Educational Facilities Laboratories (established by the Ford Foundation), 477 Madison Ave., New York City, will be published by John Wiley and Sons. Those in the building industry presently possessing information believed pertinent to the book should contact Professor R. P. Darlington, AIA, Chief Editor, Modular Dimensioning Guide Project, Modular Building Standards Assn., 2029 K St., NW, Washington, D.C.

NSPE/ASCE news

A grass-roots campaign in support of the fee survey report, "The Role of the Consulting Engineer in Federal Public Works Project," decided upon at the recent meeting of the Functional Section Executive Committee of the *National Society of Professional Engineers* has been launched with a memo to all state presidents of the NSPE urging action at the local level.

Based on the assumption that the most effective way to present such a publication to U.S. Representatives and Senators is through local, personal contacts in their home districts, the memo urges state societies and functional sections to schedule meetings between NSPE representatives and Congressmen during the fall recess. Copies of the report will be supplied by NSPE for presentation and explanation to Congressmen at these meetings.

One of the engineering profession's top awards, the *John Fritz Medal*, was presented last month to Stephen D. Bechtel, President of Bechtel Corp., San Francisco, at a session of the *American Society of Civil Engineers'* convention here. Established in 1902, it was one of the few times the Fritz Award had been given to a man whose principle professional interest has been in construction engineering. The award, a gold medal, is made annually for notable scientific or industrial achievement in the engineering profession. Mr. Bechtel is a Fellow, ASCE.

Taking office as its 92nd President, Glenn W. Holcomb, of Corvallis, Ore., urged members of the ASCE "not to be satisfied with our profession as it is today, either technically or professionally." Mr. Holcolm, Head of the Department of Civil Engineering at Oregon State College, called upon his colleagues to pursue more activity in research and to express more concern for the future of civil engineering education. He is the first educator to head the ASCE since 1954. He succeeds Frank A. Marston, of Boston, a consulting engineer.

West coast report

The *California Council* of The American Institute of Architects

awarded its highest honor, the *Distinguished Service Citation*, to two California redevelopment officials and two California architects, it was announced by President Wayne S. Hertzka, FAIA, San Francisco. The recipients, who were presented their awards during the course of the organization's 1960 convention at Yosemite, October 22, are: Ulysses Floyd Rible, FAIA, Los Angeles; Lee B. Kline, AIA, Los Angeles; M. Justin Herman, executive director of the San Francisco Redevelopment Agency; and William T. Sesnon, Jr., Chairman of the board of The Community Redevelopment Agency of the City of Los Angeles.

The 1960 AIA *Triennial Honor Awards* sponsored by the *Southern California Chapter* of the American Institute of Architects, honored the architects, owners and contractors of 20 buildings which were selected as distinguished works of architecture in Southern California at an October dinner meeting at LA's Ambassador Hotel. Awards Chairman Frederick E. Emmons, AIA, announced the recipients, with certificates for the owners and contractors of the building projects as well as for the architects (all of whom are members of the Southern California Chapter): Honor Awards to: Office Building for Cambridge Investments, Inc., Long Beach, Architect: Killingsworth, Brady and Smith & Assoc.; Office Building for Reilly Enterprises, Whittier, Architect: Albert C. Martin & Assoc.; Eighteen Merit Awards were also given.

Plans for a new million-dollar hotel for Albuquerque, N.M., were announced jointly recently by Winthrop Rockefeller and Norman E. Blankman. The hotel will be built by the J. L. White Corp., New York investment firm headed by Blankman, and will be operated as a joint venture, under the management of Winrock Enterprises, development company headed by Rockefeller. To be known as the "White-Winrock Hotel," it will be an integral part of the new multi-million dollar Winrock Center, a 120-acre commercial real estate development including stores, restaurants, offices and business enterprises. The hotel, designed by Victor Gruen, AIA, will occupy a 3½-acre site, with landscaped gardens on all sides and ample parking facilities. The lobby of the hotel will be located in a building which includes many restaurants, travel and other

(Continued on page 8)

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"FASTEN ONTO SOMETHING GOOD"
(OR TO DRILL IT OR CUT IT)
KNOW THE MAN
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Specifically, for multiple fastening in building and construction with metals of all kinds . . . and for fastening to, drilling or cutting concrete, it pays to know the man from OMARK.

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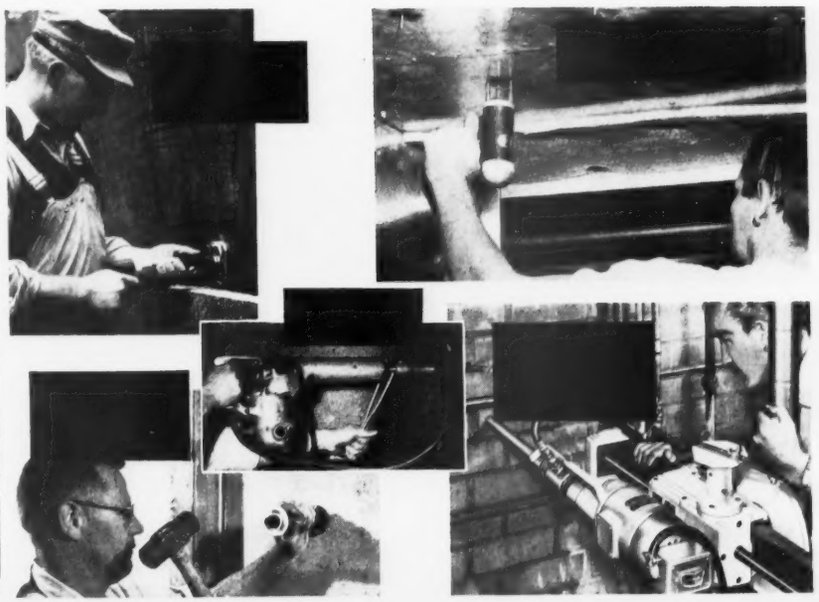

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A|E NEWS

(Continued from page 7)

service shops. There will be 120 residence rooms.

Century 21 Exposition has authorized working drawings on exhibit buildings for the Seattle Fair involving $967,000 worth of construction. Over 125,000 square feet of exhibit structures in three sections of 1962's world's fair are included in the site development program. Named to proceed with their architectural contracts are Paul Thiry, FAIA, for buildings surrounding the Coliseum Century 21, reserved for foreign government displays; Robert B. Price, a 19,810 square foot domestic commerce and industry building, and Naramore, Bain, Brady and Johanson, a unit of the Boulevards of the World.

Charles Luckman Associates, planning-architecture-engineering firm, of Los Angeles, has been retained for the 5th consecutive year as consulting architects for Exposition Park in Los Angeles. Under terms of the contract, CLA is implementing the master plan which the firm has already developed and it is available to offer guidance with respect to new projects such as proper road alignment, parking lot configuration, location of contemplated structures and circulation patterns.

Awards/grants/exhibits

The Ford Foundation recently announced a grant of $500,000 to the Rand Corp. for a three-year exploratory study of urban transportation throughout the United States. The Rand Corp., Santa Monica, Calif., is a private, nonprofit research and development organization noted for its "systems research" on major problems of national defense and strategy, using teams of researchers from engineering, economics, physics, mathematics, and the social sciences. The study marks Rand's initial entry into the transportation field.

The first *Architectural Awards of Excellence* in recognition of outstanding aesthetic design in structural steel were presented to 13 U.S. architects by the *American Institute of Steel Construction*, national association representing the fabricated structural steel industry.

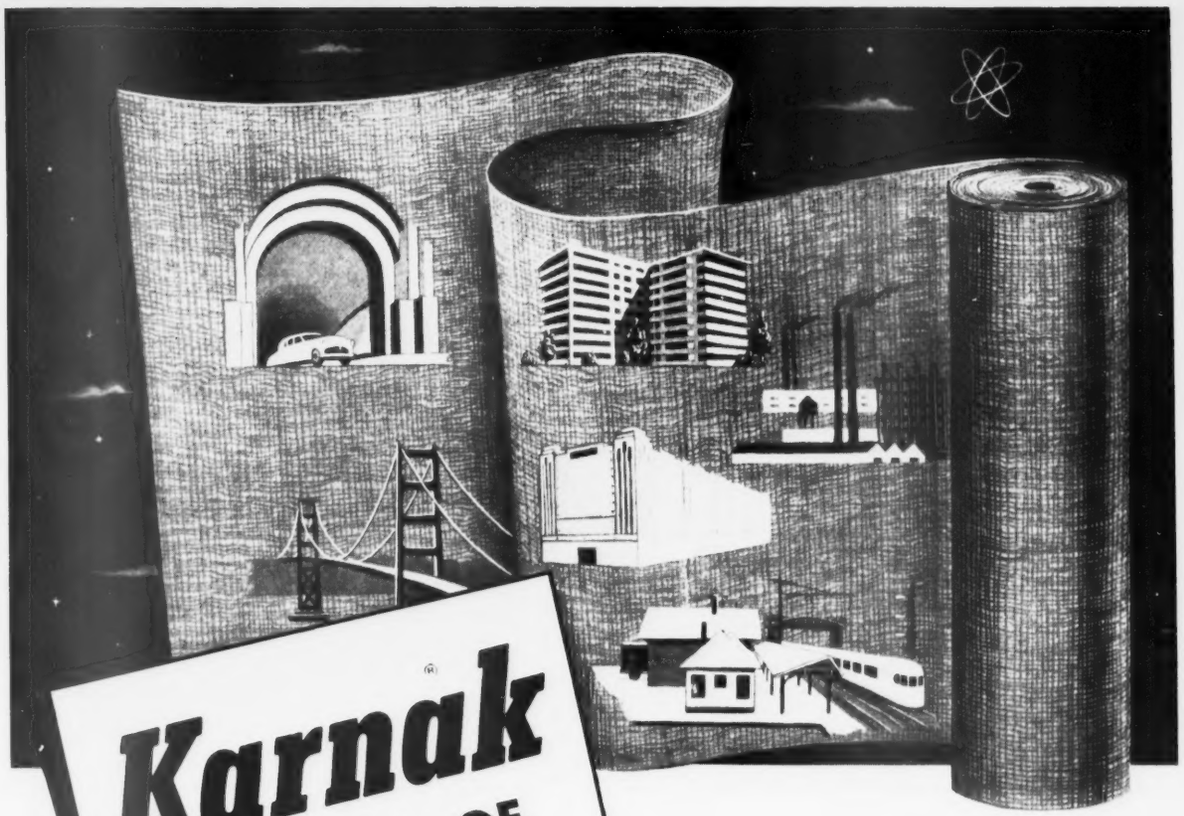
The awards were given to the architects for specific buildings that were built best with steel or best illustrated the aesthetic uses of steel. The structures range in size from a private house framed with exposed steel to a 42-story building that is the tallest tower west of the Mississippi and has a non-denominational chapel on the 39th floor. The AISC plans to make these awards an annual event, and announcement for nomination for 1961 Awards will be made next spring.

The six winners of the first stage of the *Franklin Delano Roosevelt Memorial Competition* have been announced. The successful competitors among the 574 from all parts of the country who submitted designs were: Abraham W. Geller, architect of New York City associated with Douglas Gordon, Diana Kirsch, and Claude Samton; Tasso Katselas, architect of Pittsburgh; Rolf Myller, architect of New York City; William F. Pedersen and Bradford S. Tilney, architects of Boston, associated with Joseph Wasserman, David Beer, and Norman Hoberman, sculptor; J. Edward Luders, architect, Hideo Sasaki, Don Olson and Robert J. Reilly associated as Sasaki-Walker-Luders Associates of Watertown, Mass.; and Joseph J. Wehrer, architect of the University of Michigan associated with Harold J. Borkin. The winners will be awarded $10,000 each and will prepare detailed drawings and models for submission in the final stage. The winner of the second stage will be awarded $50,000. Pietro Belluschi, FAIA, Dean of the School of Architecture and Planning, MIT, was chairman of the professional jury.

The 1961 *School Buildings Architectural Exhibit* has been announced. Information regarding submissions should be addressed to the American Assn. of School Administrators, Attn.: Dr. Shirley Cooper, 1201 Sixteenth St., N.W. Washington 6, D.C.

An exhibition of 20th century projects considered too revolutionary to build, entitled, *Visionary Architecture*, has opened at New York's Museum of Modern Art and will continue on view until December 4th. More than 30 ideas for cities on and over water and under the ground, for buildings that incorporate roads and roads that incorporate buildings, for factories and for houses designed for this country and abroad are shown in enlarged photographs and models. The exhibit will be adapted for a traveling show and a major book by Arthur Drexler will be published by the Museum of Modern Art.

Circle 107 for further information about AMERICAN BRIDGE DIV., pp 10-11 →



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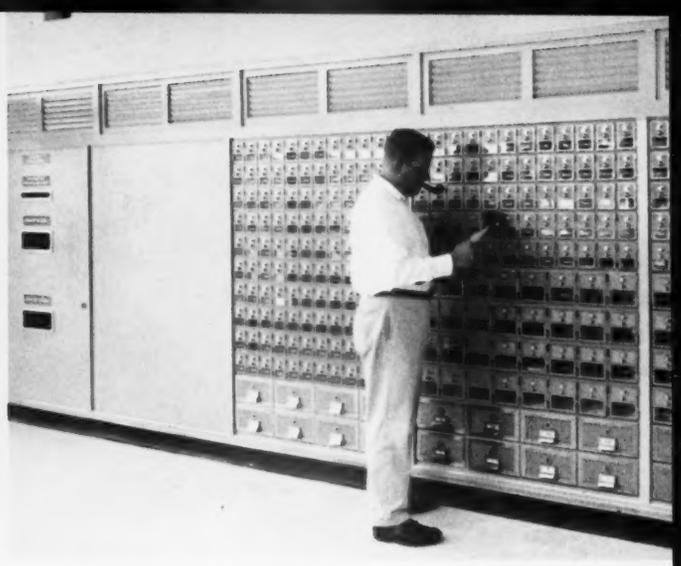

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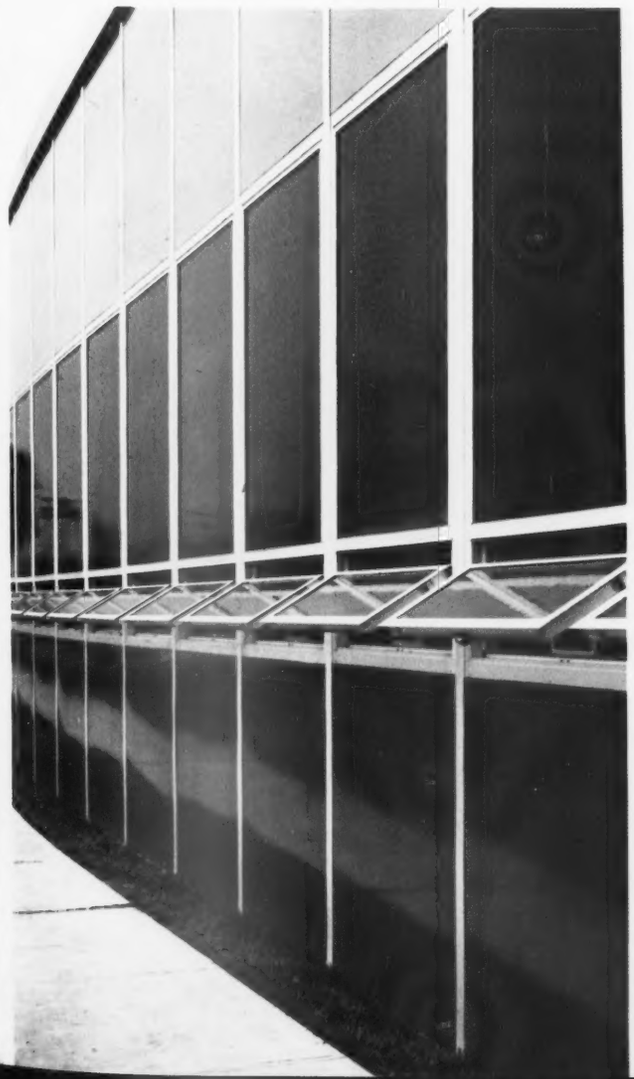

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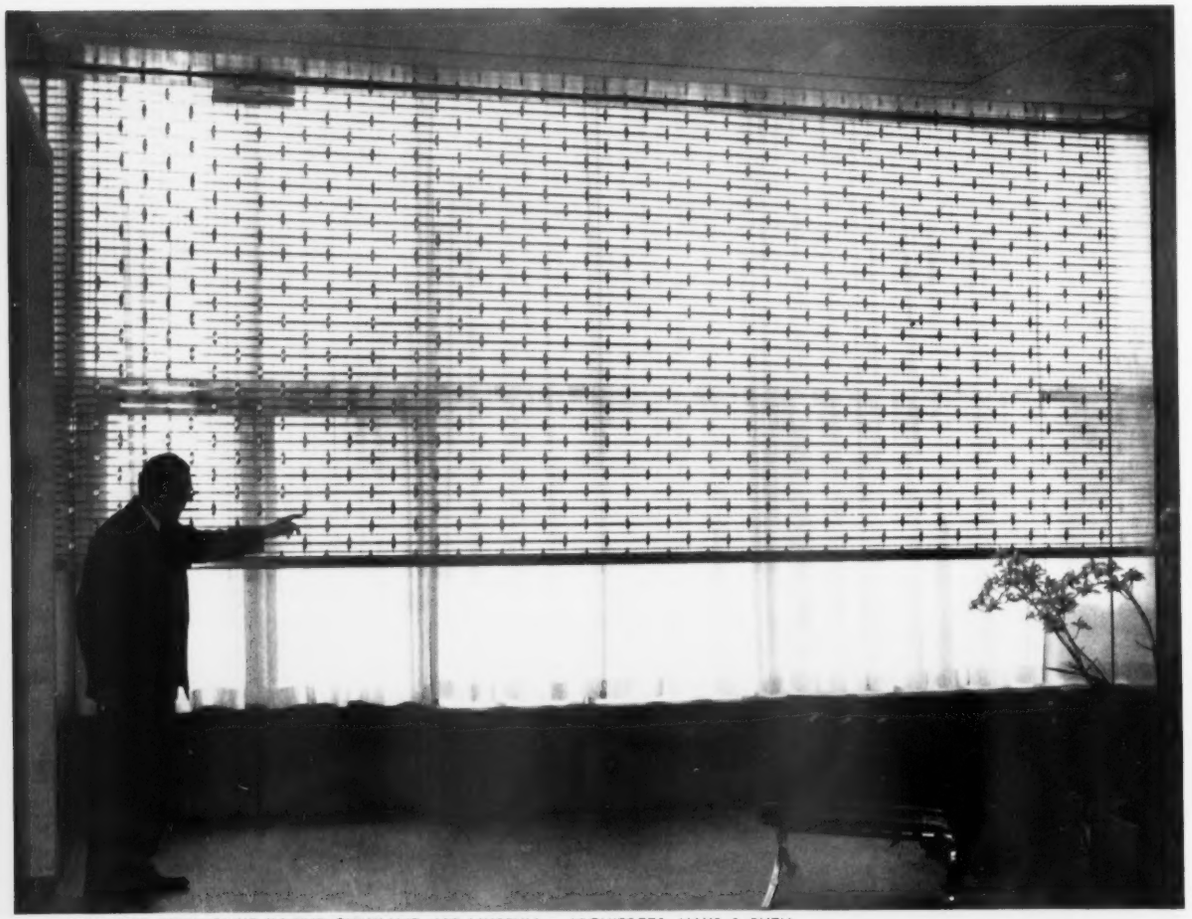

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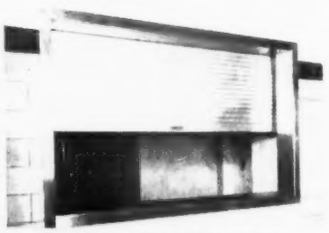

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Structural sandwich design criteria

by Edward W. Kuenzi, *Engineer, Forest Products Laboratory. This report presents design criteria for structural sandwich constructions. It originates from the Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, maintained at Madison in cooperation with the University of Wisconsin.*

A structural sandwich is a layered construction formed by bonding two thin facings to a thick core. It is a "stressed-skin" construction similar to some prefabricated house constructions in which facings are bonded to spaced stringers or studs. The core of the sandwich is continuous, or so nearly continuous that much thinner facings can be used than in stressed-skin construction.

The basic design concept is to space the strong, thin facings far enough apart with a thick core to assure that the construction will be stiff, to provide a core that is stiff and strong enough to hold the facings flat through a bonding medium such as an adhesive layer, and to provide a core of sufficient shearing resistance.

The advantage of spaced facings to provide greater stiffness without much increase in the amount of material needed was investigated in about 1820 by a Frenchman named Duleau[7] who tested spaced bolted bars and found the stiffness varied as the difference between the cube of the total thickness and the space if the bolts were very tight and not placed too far from each other. This discovery eventually led to the design of I-beams and other stiff structural shapes. The structural sandwich is analogous to an I-beam, with the facings carrying direct compression and tension loads, as do I-beam flanges, and the core carrying shear loads, as does the I-beam web.

Thus a structural sandwich is a definite, purposeful construction, carefully designed to have certain characteristics. In order to prevent confusion as to what was considered a structural sandwich, the *American Society for Testing Materials* adopted the following tentative definition in 1951 and made it standard in 1953:

ASTM C274-53. STRUCTURAL SANDWICH CONSTRUCTION: A laminar construction comprising a combination of alternating dissimilar simple or composite materials assembled and intimately fixed in relation to each other so as to use the properties of each to attain specific structural advantages for the whole assembly.

Sandwich stiffness

Stiffness is a prime consideration for most structural design. The stiffness D of a rectangular beam having thickness h, width b, and modulus of elasticity E is given by the formula

$$D = E\frac{bh^3}{12} \tag{1}$$

If a sandwich is constructed with the same over-all dimensions but with a core of a different material of thickness c, the stiffness is given by

$$D = \frac{E_f\, b(h^3 - c^3)}{12} + E_c\frac{bc^3}{12} \tag{2}$$

where E_f is the modulus of elasticity of the facings and E_c is the modulus of elasticity of the core. For simplicity here, it has been assumed that the facings are of equal thickness. Mathematical formulas have been derived for constructions with facings of different materials and thicknesses.[2]

Since the core of the sandwich is to be extremely lightweight compared to the facings, it will probably be a weak, limber material whose stiffness can be neglected in considering the sandwich stiffness. Thus, the last term of the preceding formula may be omitted, and the sandwich stiffness given simply by

$$D = \frac{E_f\, b(h^3 - c^3)}{12} \tag{3}$$

which can be rewritten as

$$D = \frac{E_f\, bh^3}{12}\left(1 - \frac{c^3}{h^3}\right) \tag{4}$$

The amount of facing material in a piece of sandwich is given by

$$A_f = 2fb \tag{5}$$

where f is the facing thickness and b is the sandwich width. This may also be expressed by $A_f = (h\text{-}c)b$ or

$$A_f = hb\left(1 - \frac{c}{h}\right) \tag{6}$$

The term $(1\text{-}c/h)$ of formula (6) represents the proportion of facing material in a sandwich as compared to total material in a rectangular section of area hb. Similarly, the term $(1\text{-}c^3/h^3)$ of formula (4) represents the proportion of stiffness of the sandwich as compared to the stiffness of a rectangular section given by formula (1). Then, for example, if a sandwich has one-eighth the amount of facing material in a solid section, $(1\text{-}c/h) = 1/8$ and $c/h = 7/8$. Entering formula (4) with $c/h = 7/8$, we find that $c^3/h^3 = 2/3$ (approximately) and $(1\text{-}c^3/h^3) = 1/3$, or the sandwich has one-third the stiffness of a solid section of the same width and depth as the sandwich and of the same material as the facing. Therefore, a sandwich having one-eighth the weight (excluding the light-weight core) of solid material can be made to have one-third the stiffness of solid material. If the sandwich is three times wider than solid material, it will have the same stiffness as the solid material and still be only three-eighths as heavy.

Obviously, the gain in stiffness-weight ratio possible with structural sandwich might be offset by reductions in shear stiffness and strength. As Duleau discovered, it was necessary that the bars be held tightly by the bolts to allow shears to be transmitted. By the same token, the sandwich facings must also be securely bonded to the core, otherwise the stiffness will be no more than the sum of the stiffnesses of each of the sandwich parts.

Thus far the design discussion has been limited to determining the flexural stiffness D or in the more usual terminology the EI of the sandwich. This stiffness is used in the design of beams, particularly in regard to limitations on deflections. The deflection of a sandwich beam, however, is not given entirely by the flexural stiffness. It must also include the deflection due to shearing deformations, because the core material may have a low shear modulus. Thus, in solving for deflections of sandwich beams, the following expression must be integrated (2)

$$\frac{d^2y}{dx^2} = -\frac{M_x}{D} - \frac{1}{N}\left(\frac{dV_x}{dx}\right) \tag{7}$$

where y is deflection, x is distance along the beam,

(Continued on page 14)

← Circle 107 for further information about AMERICAN BRIDGE DIV., pp 10-11

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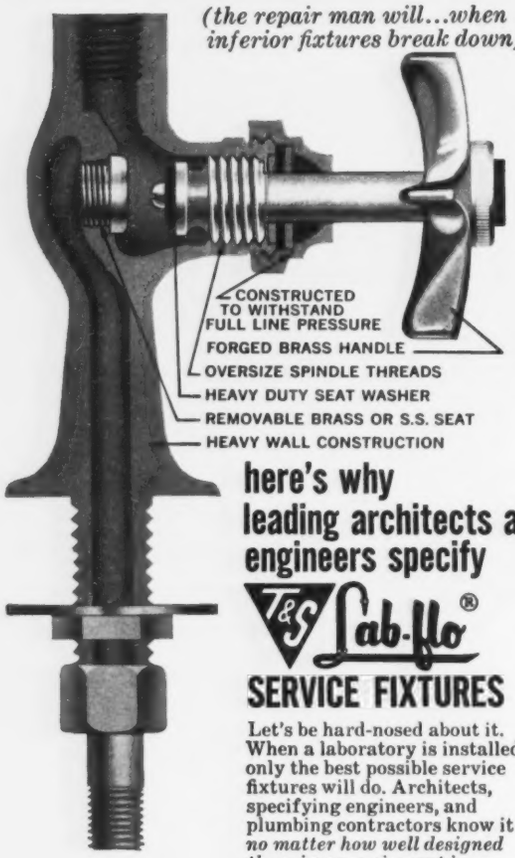
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STRUCTURAL SANDWICH DESIGN CRITERIA

(Continued from page 13)

M_x is moment at point x, V_x is shear load at point x, D is flexural stiffness given by formula (3), and N is shear stiffness of sandwich. For sandwich having thin facings,

$$N = \frac{(h + c)\, b}{2} G_c \tag{8}$$

where G_c is the core shear modulus.

Integration of formula (7) leads to the following general expression for deflection of a sandwich beam or panel,

$$y = \frac{k_B\, Pa^3}{D} + \frac{k_s\, Pa}{N} \tag{9}$$

where y is deflection, P is total load, a is span, D is flexural stiffness given by formula (3), N is shear stiffness given by formula (8), and k_B and k_s are constants dependent on the beam loading. Formula (9) gives deflection in terms of the usual bending deflection (first term) and the shear deflection (second term). For a long span, the first term of formula (9) will be of more consequence than the second term. This is also true in dealing with other materials where it is usually necessary to consider shearing deflections only if the span is very short. Values for the constants k_B and k_s for several beam loadings are given in table 1.

Strength of sandwich

The strength of a sandwich beam under bending and shear loads is determined by the ability of the facings to resist compression or tension and that of the core and adhesive bond to resist shear. The stresses produced in the facings by bending moment applied to the sandwich are given by the formula

$$F = \frac{2M}{f(h + c)b} \tag{10}$$

where F is the mean compressive or tensile stress, M is the bending moment, f is the thickness of one facing, h is the total sandwich thickness, c is the core thickness, and b is the sandwich width. The shear stress in the core is given by

$$S = \frac{2V}{(h + c)\, b} \tag{11}$$

where S is the core shear stress, and V is the shear load on the sandwich.

Formulas (10 and (11) are approximate and can be used for most sandwich with thin facings and moderately rigid and thick cores. If facings are thick and cores fairly thin and of very low rigidity, more accurate analyses must be used to take into account the shear load carried by the facings.[4]

Sandwich construction may also be used effectively for carrying edge loads, as might be required if it were used for bearing walls in buildings. Such design must be dependent upon the buckling resistance of a sandwich column or upon its ability to resist direct compression in the facings, whichever is the lesser. Compressive stresses in the facings are given by the formula

$$S = \frac{P}{2fb} \tag{12}$$

If the panel is simply supported at its ends, the column buckling load is given by

$$P = \frac{\pi^2 D}{a^2\left(1 + \dfrac{\pi^2 D}{c^2 N}\right)} \tag{13}$$

where P is total load, f is facing thickness, b is column width, a is column length, D is defined by equation (3), and N is defined by equation (8). The second term in the denominator of formula (13) accounts for possible shearing deformation in the core.

If the load-bearing wall panel is held in line at its vertical edges, the buckling load of the panel is given approximately[3] by

$$P = \frac{4\,\pi^2\, D}{b^2\left(1 + \dfrac{\pi^2 D}{b^2 N}\right)^2} \tag{14}$$

for panels that are at least as long as they are wide and for which the second term in the bracket of the denominator is less than or equal to unity. In formula (14), P is total load, b is panel width, D is given by equation (3), and N is given by equation (8).

The preceding design criteria for sandwich stiffness and strength are suitable for sandwich with thin isotropic facings and isotropic cores and are approximate for orthotropic materials. More exact analyses have been made for sandwich with ortho-

LOADING	BEAM ENDS	DEFLECTION AT	k_B	k_S
Uniformly distributed	Both simply supported	Midspan	5/384	1/8
Uniformly distributed	Both clamped	do	1/384	1/8
Concentrated at midspan	Both simply supported	do	1/48	1/4
Concentrated at midspan	Both clamped	do	1/192	1/4
Concentrated at outer quarter points	Both simply supported	do	11/768	1/8
Concentrated at outer quarter points	Both simply supported	Load point	1/96	1/8
Uniformly distributed	Cantilever, 1 free 1 clamped	Free end	1/8	1/2
Concentrated at free end	do	do	1/3	1

Table 1. VALUES OF k_B and k_S for SEVERAL SANDWICH BEAM LOADINGS

tropic facings and cores and for moderately thick facings. Such analyses have been prepared in general form for design of aircraft sandwich components and are available in report form the U.S. Forest Products Laboratory. Much of the design information and fabrication techniques has been summarized for the aircraft industry.[10]

Design example

In order to illustrate a design procedure, consider a design of a floor panel of sandwich construction. The panel is to be simply supported at its ends on a 12-foot span. Its width is to be 4 feet. The design load is to be 40 pounds per square foot and the maximum deflection under this load shall be no more than 0.20 inch. The facings are to be plywood having an effective compression and tensile modulus of elasticity of 1,000,000 pounds per square inch and a compressive design stress of 1,200 pounds per square inch; tensile stress exceeds this, so the design must be based on compressive stress. The core is to be of a material having a shear design stress of 20 pounds per square inch and a shear modulus of 8,000 pounds per square inch.

Because the panel is fairly long, the design will probably depend upon deflection rather than shear or facing stress; and the core thickness will be found by assuming a facing thickness, solving the deflection equation for the core thickness, and then checking the core shear stress and facing compression stress.

From the prescribed loading and equation (9), the maximum deflection of the panel is given by

$$y = \frac{5\,Pa^3}{384\,D} + \frac{Pa}{8N} \qquad (15)$$

By substituting $h = c + 2f$ in equation (3), the expression for D becomes

$$D = \frac{E_f b}{12}\,(6\,c^2 f + 12 c f^2 + 8\,f^3)$$

which can be written as follows if a $2f^3$ term is neglected

$$D = \frac{E_f f\,(c+f)^2 b}{2} \qquad (16)$$

Also, formula (8) for N can be written as

$$N = G_c(c+f)b \qquad (17)$$

Substituting (16) and (17) into (15) gives

$$y = \frac{5\,Pa^3}{192\,E_f b f (c+f)^2} + \frac{Pa}{8G_c b(c+f)} \qquad (18)$$

which can be written as

$$(c+f)^2 - \frac{Pa}{8G_c b\,y}\,(c+f) - \frac{5\,Pa^3}{192\,E_f b\,f\,y} = 0 \qquad (19)$$

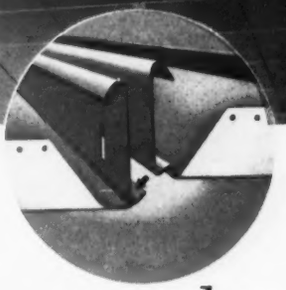
and solving (19) for c finally results in

$$c = \frac{Pa}{16\,G_c\,b\,y}\left[1 + \sqrt{1 + \frac{20\,G_c^2 b\,y\,a}{3\,PE_f\,f}}\right] - f \qquad (20)$$

Since the panel is to be a floor panel, and the facing must be thick enough to withstand some concentrated and localized impact loads; hence a facing 1/2 inch thick will be used. (For purposes of this

(Continued on page 16)

just a lip



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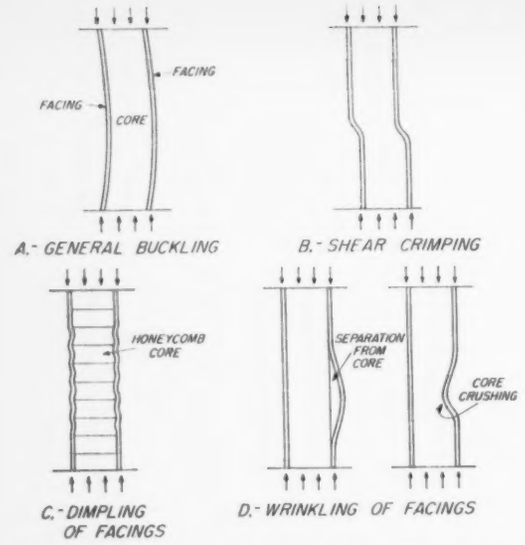

FIGURE 1. Modes of failure of sandwich construction under edgewise loads. A, General buckling; B, shear crimping; C, dimpling of facings; D, wrinkling of facings either away from or into core.

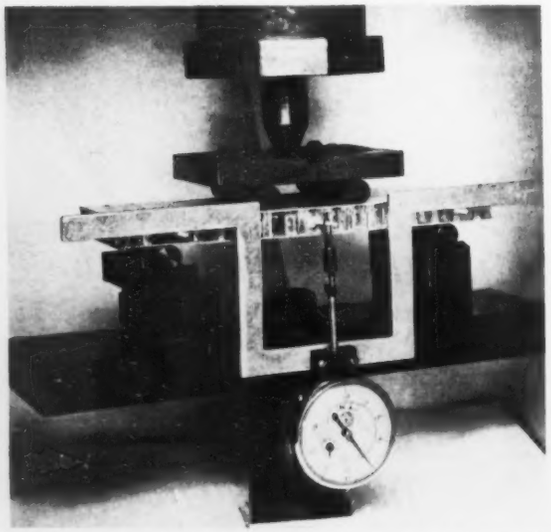

FIGURE 2. Apparatus for conducting flexure test of sandwich construction.

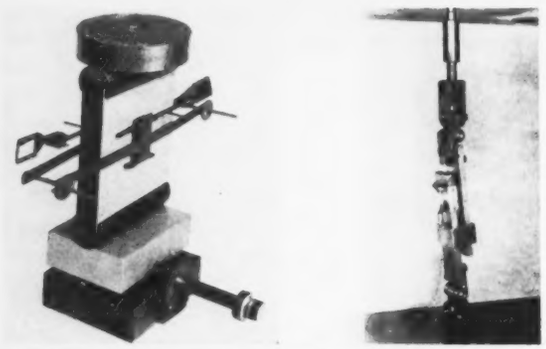

FIGURE 3. (left) Apparatus for testing sandwich construction in edgewise compression. FIGURE 4. (right) Apparatus for determining shear characteristics of sandwich cores.

STRUCTURAL SANDWICH DESIGN CRITERIA

(Continued from page 15)

paper, both facings are to be of the same thickness. It might, however be advantageous to use a thinner lower facing, in which case other mathematical formulas must be used [9].) No rational design criteria are available for considering concentrated and impact loads, and the designer must judge from the intended use whether thick facings are needed. Solving equation (20) gives

$$c = \frac{1920 \times 144}{16 \times 8000 \times 48 \times 0.20}$$

$$\left[1 + \sqrt{1 + \frac{20 \times \frac{2}{8000} \times 48 \times 0.20 \times 144}{3 \times 1920 \times 1{,}000{,}000 \times 0.50}}\right] - 0.50$$

$$c = 0.225\,[1 + \sqrt{615.4}] - 0.50 = 5.3 \text{ inches}$$

From this, the total thickness of the panel will be 6.3 inches and $(h + c) = 11.6$ inches, and from equation (10) the facing stress will be

$$F = \frac{2 \times 34{,}560}{0.50 \times 11.6 \times 48} = 248 \text{ psi}$$

and the core shear stress

$$S = \frac{2 \times 960}{11.6 \times 48} = 3.44 \text{ psi}$$

Thus, the facing stress is about 20 per cent and the core stress about 17 per cent of design values.

Modes of failure

Tests of sandwich to failure give much useful information, particularly if the sandwich is to be redesigned to increase its load-carrying capacity. Figure 1 illustrates the possible modes of failure that may occur in addition to failures of compression or tension in the facings and shearing of the bond between facing and core.

General buckling of sandwich under edge load occurs as shown in figure 1,*A*. This type of failure is predictable by use of formulas (13) and (14). Increase of the load at which general buckling occurs can be obtained by increasing the core thickness or increasing the facing stiffness. Similar failure of sandwich in flatwise flexure is characterized by increasing deflection without much increase in load.

Shear crimping of sandwich under edge load, as shown in figure 1,*B*, occurs because of low sandwich shear stiffness. The failure is predictable by use of formulas (13) and (14) when the second term of the denominator becomes large. Load-carrying capacity can be improved by increasing the core shear modulus or using a thicker core. Failure of sandwich under flatwise bending and shear can have a similar appearance. Such sandwich can be improved best by using a thicker core of greater shear strength.

Dimpling of facings can occur in sandwich with thin facings on honeycomb cores. The type of failure is shown in figure 1,*C*. The facing stress at which dimpling occurs can be predicted[8]. Dimpling can also occur in the compression facing of a sandwich subjected to flatwise bending. Improvement in the sandwich, if necessary, can be attained by decreasing the honeycomb cell size or by increasing the facing stiffness.

Wrinkling of sandwich facings can occur as shown in figure 1,*D*. Wrinkling of the facings can result in local separation of the facing from the core, and if the bond between facings is strengthened, can result in local crushing of the facing into the core. Analyses have been made of failures of this type[5], and predictions of critical facing stresses involve parameters combing core elastic properties and initial facing waviness. Determinations of facing stresses at wrinkling are best made by testing small specimens and applying the results, along with core and sandwich properties, with the theory to predict performance of similar constructions. Wrinkling of the compression facing of sandwich in flatwise bending can also occur.

Methods of test

Often, in order to prove a design, it is necessary to test complete sandwich panels or small specimens, and it may even be necessary to evaluate core properties by some tests. Test of complete panels for buildings can be conducted according to standard procedures published by the *American Society for Testing Materials*[1]. They include the following:

1. *Tests of walls: axial loads (compressive and tensile), transverse load, concentrated load, impact load, and racking load.*
2. *Tests of load-bearing partitions: general requirements.*
3. *Tests of non-load-bearing partitions: impact load and concentrated load.*
4. *Tests of roofs: transverse load and concentrated load.*
5. *Tests of floors: transverse load, concentrated load, and impact load.*

Test methods for sandwich construction and for core materials have been published by the *American Society for Testing Materials* and the *U.S. Department of Defense*[6]. Of particular interest here are the flatwise tension test for sandwich, and the shear test for core material.

The flatwise flexure test (see ASTM C393-57T or MIL-STD-401A) can be designed to determine flexural and shear stiffness of the construction, approximate core shear modulus and core shear strength, and moment-carrying capacity of the sandwich, by use of rather small sandwich specimens. Apparatus for testing flexure specimens is shown in figure 2. Essential features of the apparatus include one moveable reaction point and load applied through a pivot point so that slight twist of a specimen is easily accommodated, and measurement of deflection with a dial gage supported on pins placed in the core at reactions for measuring midspan deflection of a pin placed in the core. This means of measuring deflection assures that apparatus deflection or deformations will not be included as specimen deflection.

The edgewise compression test (see ASTM C364-57 or MIL-STD-401A) employs small specimens to determine ultimate load-carrying capacity of the sandwich construction and modes of failure such as those shown in figure 1. Important to the test are precautions that must be taken to avoid eccentricity of load application. In order to accomplish this, it is necessary to observe deformations in each facing in the initial loading stage and to adjust loading until deformations are alike in each facing before loading to failure. Apparatus shown in figure 3 has been found to perform satisfactorily. Facing deformations are measured with Marten's mirror compressometers, and any necessary adjustment to equalize deformations is done by turning a screw

under the movable base at lower end of specimen.

The flatwise tensile test of sandwich construction (see ASTM C297-55 or MIL-STD-401A) is designed to determine the strength normal to the sandwich facings. Load is applied through blocks bonded to the sandwich facings. Failure occurs in the core material or in the bond between the facing and core. The strength values obtained are useful in predicting wrinkling of the facing of the sandwich, as discussed previously, especially if data is available on core-flatwise properties.

The shear test for core material (see ASTM C273-53 or MIL-STD-401A) determines core shear modulus and core shear strength—data that is useful for computing shear deflection and strength of sandwich in bending and for determining values of the parameters, using shear modulus in computing buckling of columns and panels under edge load. Apparatus for conducting the test under testing load is shown in figure 4. The test specimen is at least 12 times as long as its thickness, and load is applied along a line connecting diagonally opposite ends of the specimen through fittings attached to plates bonded to the specimen. Shear deformations are measured with a dial gage arranged to measure slip of one loading plate with reference to the other. In order to prevent excessive bond deformation, the adhesive used to join the loading plates to the core should be rigid and as thin as possible.

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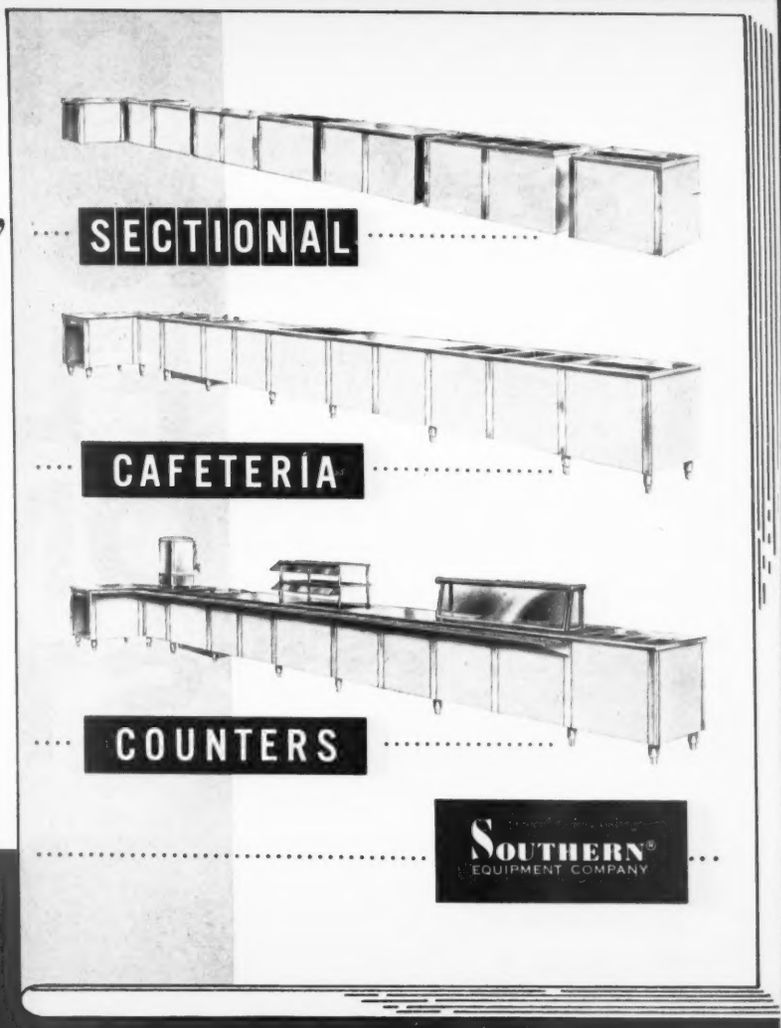

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NEW CLEAR SPANS AND FLOOR COMPONENT SYSTEMS

Economies in materials, labor and time are features of these two new proprietary flooring systems of component construction.

A new structural building component capable of 50-foot clear spans has been introduced on the American market. This system, known as *Trofdek*, provides a unique application of the folded plate idea in which thin sheets of plywood are glued to light lumber stiffeners in a series of miniature troughs, producing a roof or floor component with extreme light weight. The new component is particularly suitable for longer spans. It has been used for roof structures, floors and concrete forms in more than 500 buildings in Great Britain and Canada.

This proprietary system consists of a series of fabricated lumber and plywood troughs joined on a 16" module. The troughs run parallel to the span and, depending on load, vary in depth from 5¾" to 15½". The component is capable of carrying up to 100 times its own weight. Two men can easily handle a standard 100 sq. ft. panel, although the material combines both framing and deck.

It may be used as either removable concrete forming or as a permanent part of the pour. In either case, reinforcing steel may be laid directly in the troughs. Forming time is cut, less concrete is required and smaller amounts of steel are needed, Canadian test results indicate.

The appearance of the system as seen from below is an important factor in its wide acceptance, its developers claim. Where the component is used alone or left in place after serving as formwork, a wooden ceiling with an unusual, pleasing texture is the result. Where formwork is removed, the concrete takes the system's shape.

An advantage to leaving it in place on a concrete job is the ease with which wiring and piping may be attached to the wood surface. When it is calculated as a structural part of the building, time also is saved that otherwise would be required for removing forms.

It is stated that in conventional application, the system becomes progressively more economical as spans lengthen. It also permits incidental savings in framing and in wiring, since lighting fixtures may be recessed in the troughs.

New DFPA floor approach

A new, low-cost approach to floor systems for residential and light commercial construction has been perfected in laboratory and field tests according to an announcement by the *Douglas Fir Plywood Assn.* Called *Insta-Floor*, the panelized system was first used last fall in a research house at Champaign, Ill.

The system requires a minimum of floor framing, with girders set 4 feet on center. These can be of any conventional material suitable for the span, including solid beams, built-up beams or plywood box beams. Where box beams are used, they must be fabricated to close specifications, preferably under the manufacturer's control.

Although its economies increase with the amount of floor area involved, the system's costs range from 35¢ to 40¢ per square foot in experimental applications by builders of small homes. Allowing for the addition of underlayment and finished flooring, the completed floor cost ranges from 80¢ to $1.00 psf.

Reduction of labor accounts for nearly all the savings. In a timed test late last year, a Chehalis, Wash., builder laid 1,170 square feet of the floor system, including all supporting members, in just under 10 minutes. Although his six-man crew was familiar

with component system construction, it is believed other builders could make proportional savings in time.

How the system works

Basically, the floor system is made up of half-inch 4 x 8 foot fir plywood panels, with stringers pre-attached 16" o.c. across the panels. These units are supported by beams in one of two ways, eliminating all cutting and fitting on the job and all nailing except that required to fasten the panels down from above. No across blocking is required except that already in place on the plywood panels.

The method followed in the Chehalis homes used a 10" deep plywood box beam with top and bottom 2 x 4 flanges, glue-nailed to ⅜" fir plywood webs. This beam was used over a crawl space and requires supports 14' o.c. The beams are set into 8" deep pockets preformed in the foundation and rest on concrete footings at the center. Ledger strips of 1 x 2 stock are shop-applied so that the re-sized stringers on the panels will rest on them. The floor panels overhang the stringers 2" and are joined and fastened by being power-stapled to the top flange of the beams. Ledger strips are used on the outside courses of panels and rest in pre-formed ledges on the foundation.

The second fastening method eliminates the ledger strips and adds a 2 x 4 spline on edge along the top of the beam. In this case, the stringers rest directly on top of the beam and are connected with nails at the common spline. The only difference is in the plywood overhang at the stringer ends.

Significant savings

Another builder, this one in Muskegon, Mich., also was able to come up with some significant cost savings through the use of the floor system. The builder claims savings of $39.40 over a conventional floor system for each house the first time he tried it. He feels that this saving will amount to about $75.00 for an average sized house once his crew is familiar with the system.

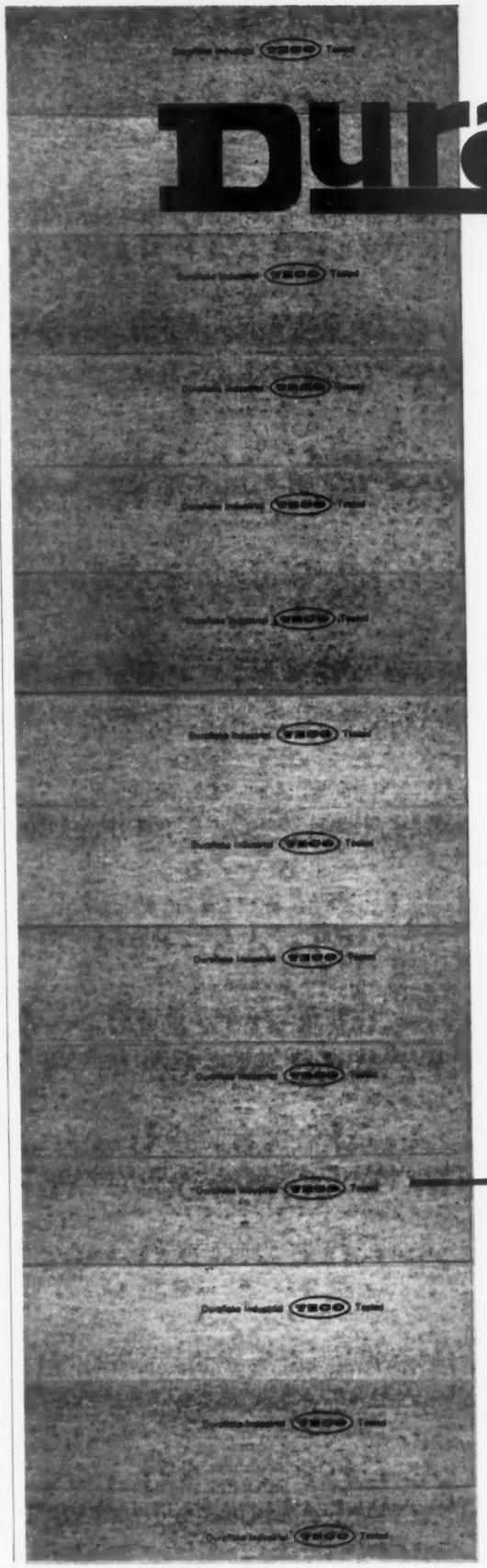
An important feature of the floor is its dimensional stability. Requirements for manufacture of the panels and box beams (where solid lumber is not used) call for re-sized, kiln, dried lumber. Where the floor is applied over a crawl space, the beams should be wrapped in polyethylene film unless a moisture barrier is used below them. The Washington builder, who used pockets pre-formed in the foundation, and a moisture barrier over the crawl space, found he got satisfactory results where only the beam ends were wrapped.

The comparatively wide differences in per square foot costs are caused by the different fastening methods and the difference in raw materials due to the distance from the source of the manufacturer.

There are stated to be a number of definite advantages to the system in addition to its low cost and high speed of application.

Where access to the crawl space is desirable, any number of panels may be left unfastened until time to install underlayment. This allows carpenters to work around subcontractors and makes it possible for the builder to get more favorable rates from electrical, plumbing and heating subs.

In addition, where the beams are set in, the house is 4" closer to the ground than with conventional construction, and one whole course of siding, extra porch flashing and other material is eliminated. The set-in beams also have the effect of making every man "four inches taller" on the job and help give the house a ground-hugging look.



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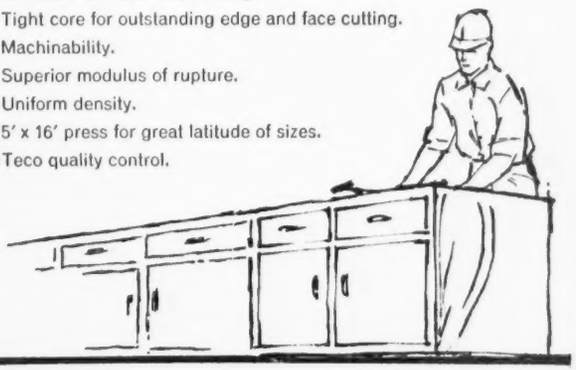

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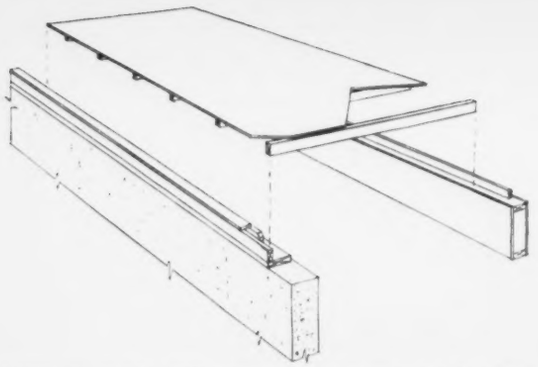
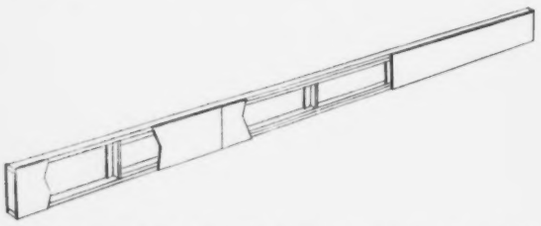
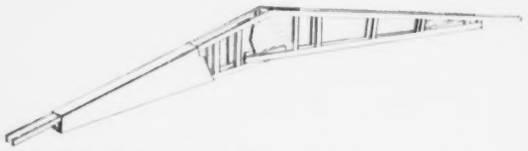


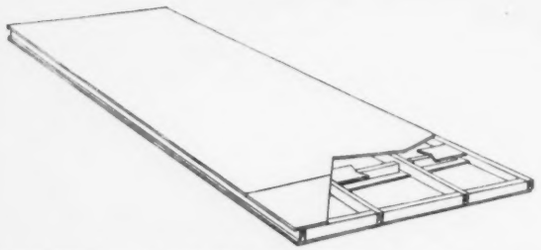
INSTANT FLOOR SYSTEM: Exploded view shows details of pre-assembled floor panels in the research-demonstration house. The panels are made up with ½" fir plywood nailed to 2 x 4 framing members, 16" on center.



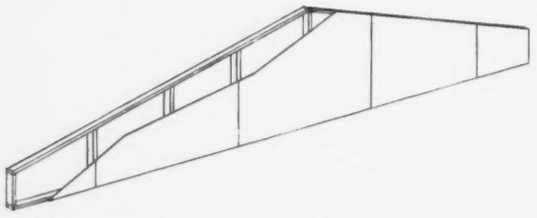
BOX BEAM FLOOR GIRDER: These beams are hollow, lightweight structural members which are made up with ⅜" fir plywood "webs," or sides, pressure glued to 2 x 4 lumber flanges. They span 24 feet, and are 16" deep.



CATHEDRAL BOX BEAMS: Beams are fabricated in halves for easy handling, and joined at job site. Sides, or webs are 5/16" walnut-printed fir plywood. Webs are pressure glued to 2 x 4 top and bottom flanges and spacers.



STRESSED SKIN PANELS: Panels form roof deck over the living wing and kitchen-utility wing. Panels have ⅜" plywood skins and 5/16" medium density plywood bottom skins, pressure glued to 2 x 4 framing.



GARAGE LINTEL: Made up with a ½" medium density overlaid fir plywood "skin" nailed to 2 x 4 framing. It spans a 16' opening. No gluing is required in fabrication.

Specially designed cathedral box beams, on 8' centers, are the roof supports for the living wing. These beams have walnut-printed overlaid fir plywood webs. This provides a pre-finished beam which can be fabricated in the shop and put into place without additional finish.

COMPONENT BUILDING SYSTEM

A component building system which may be 50 per cent faster than conventional construction was recently previewed at Champaign, Ill. The occasion was the erection of a research-demonstration house sponsored by Douglas Fir Plywood Assn., Lumber Dealers Research Council, and Plywood Fabricators Service.

Purpose of the house, which has been called a "component showcase," was to demonstrate the economy and practicality of combining several new plywood components with standard Lu-Re-Co wall panels and trusses. It was designed to show the advantages of building a house with standardized, sub-assembled building parts, fabricated in local plants.

Officials from the Federal Housing Administration and representatives from building materials firms were on hand to see the plywood box beams, stressed skin panels, rigid frames, panelized floor systems, and Lu-Re-Co wall panels go into place.

The contractor who built the house said: "This was a research, prototype structure, and naturally it takes the construction crew a while to become familiar with the new system. However, if my men were accustomed to the system and the fabricator made a few modifications in assembling the components, we could build this house in about half the time required for conventional construction."

Observers who watched the demonstration house take shape included Neil Connor, AIA, Director, Architectural Standards Division, FHA, Washington, D. C.; Albert Harris, Structural Engineer, FHA; Raymon Harrell, Executive Vice President and Research Director, Lu-Re-Co; Robert Payne, Public Relations Director, National Retail Lumber Dealers Assn; and D. B. Sedgwick, Merchandising Director, DFPA.

House design

The research-demonstration house was designed by Laurence S. Higgins, AIA, of the Lumber Dealers Research Council. The new components were designed by David Countryman, Chief of Applied Research, DFPA.

Since it is a demonstration project, the house shows a group of construction features which would not normally be grouped into one design. Therefore, the plan is divided into separate wings or zones, each utilizing a different framing method for cost control and comparison features. The continuity of the siding and pitch of the roof help tie the design together.

Floor plan

The floor plan is in the general shape of an "A", with the bedroom wing and garage at the feet of the A, and the living wing at the tip.

The 768-square foot living wing has a dining room, living room, and an "informal" or family room with a large fireplace.

The bedroom wing has 816 square feet of space, and includes three bedrooms, a bedroom-study, bath, and dressing room. This "quiet wing" is separated from the busy activity of the other areas.

Between the living and bedroom wings, more or less in the arm of the "A", is a 416-square foot zone which includes the kitchen, entry area, pantry, laundry, and a half-bath.

A basement under the living wing has space for recreation facilities, a utility and storage room, and a work shop.

Construction

The house provides an imaginative but practical merger of known component construction methods with new component techniques. Here is a summary of the components used in its construction:

Floor: One of the most distinctive features of the new house is an unusual floor system designed by DFPA's David Countryman. Preassembled floor panels made up with ½" plywood nailed to 2 x 4 framing are supported by plywood box beams.

The beams are hollow, lightweight structural units which are 4' on center and span either 12' or 24'. They are fabricated with ⅜" fir plywood webs, glued to 2 x 4 top and bottom flanges. Depth of the beams ranges from 12" to 16", depending upon span.

The floor panels rest on top of the box beams. The plywood extends beyond the 2 x 4 framing and is nailed to a separate 2 x 4 spline running along the top of the beam. This spline supports the plywood edge and ties the panels together.

This new componentized floor system is easily fabricated, and was put down by four men in only six hours. There is practically no waste plywood. Fabrication costs were only 40¢ per panel.

Walls: Wall panels are modifications of standard 4 x 8 Lu-Re-Co panels. They have one plywood skin nailed to 2 x 4 framing. The main load-carrying

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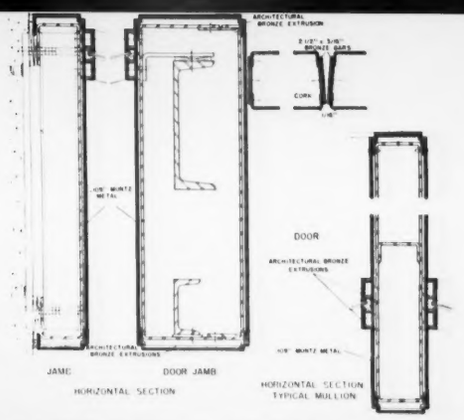

St. Andrew's Episcopal Cathedral, Honolulu. Here bronze in the soft statuary finish complements the grace and dignity of a contemporary Gothic design. A wise choice of standard materials made substantial economies possible. Drawing above shows how Architectural Bronze extrusions were used for pilaster faces and corners. Flat surfaces are of Muntz Metal sheet. Bronze facing on doors is bonded to a reinforced sheet steel core. Architect: Carleton Monroe Winslow, Beverly Hills, Calif. Fabricator: Cochran-Izant & Co., Los Angeles, Calif.

Bronze in weathered or natural finish blends warmth and dignity

These contrasting applications of bronze are two of many new examples shown in our 2nd Edition of "Architectural Metals by Anaconda." Its 64 pages give practical and detailed information on the available metals, their compositions, colors, forms, physical and mechanical properties, application methods, suggested specifications, and many pages of fabricators' shop drawings. Write for your copy today. Address: Anaconda American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario. 6023

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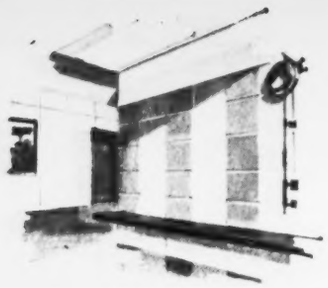
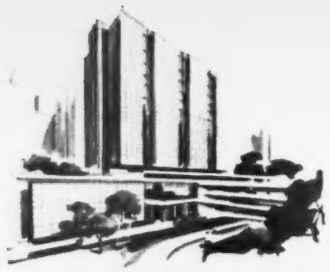
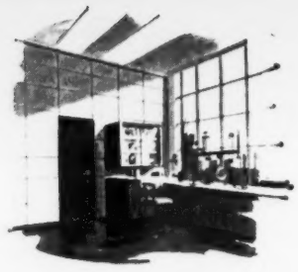


SCHOOL CORRIDOR

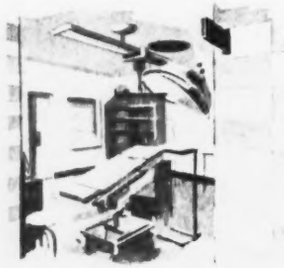


OFFICE BUILDING



LABORATORY

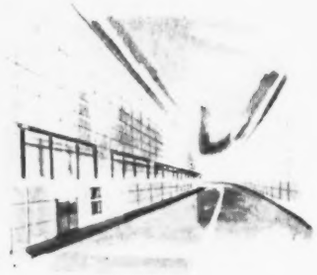
STORE FRONT



HOSPITAL

ELEMENTARY SCHOOL

RESTAURANT



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COMPONENT BUILDING SYSTEM
(Continued from page 20)

members are 2 x 4 studs at the panel edges. Horizontal 2 x 4 blocking on 24" centers stiffens the panel.

The plywood skin on these wall panels is ½" medium density overlaid type, which has a smooth, resin fiber surface that provides an excellent paint base. The plywood functions as a one thickness combination sheathing-siding. The adequacy of this nailed panel has been thoroughly tested at the DFPA applied research laboratory. A decorative siding effect is achieved by battens on 12" centers.

Roof: The house has a 3/12 pitched roof. Two-by-four king post trusses with plywood gusset plates provide roof support over the bedroom wing. The roof decking is ⅜" scored plywood sheathing with accessory clips.

Specially designed, exposed cathedral type box beams on 8" centers are the roof supports for the living wing. For ease in handling, these beams are fabricated in longitudinal halves, and are joined at the job site by splicing them together with plywood cover plates nailed to the top and bottom flanges.

A unique feature of these box beams is the walnut-printed overlaid fir plywood which is used for the webs. This provides a prefinished beam which can be fabricated in the shop and put into place without additional finishing. The 5/16" walnut-printed fir plywood is pressure glued to 2 x 4 top and bottom flanges. The special printing process was developed by the finish manufacturer.

The "walnutized" cathedral beams support a stressed skin panel roof deck. The panels have ⅜" plywood top skins and 5/16" medium density plywood bottom skins, pressure glued to 2 x 4 framing. Each panel contains a 3" layer of reflective covered glass fiber insulation.

The bottom skin of the panels is the exposed ceiling of the living wing. Similar stressed skin panels form the roof of the kitchen-utility area, but span 13'-6" plus a 4' overhang.

Garage: The construction of the two-car garage is still another example of a component system. Preassembled rigid frame bents made up with 2 x 8 framing and ⅜" plywood gusset plates are spaced 2' on center. They are covered with a ⅜" scored roof deck, with accessory clips. These bents are fabricated in halves and joined at the site with a nailed crown gusset.

Miscellaneous components: The research-demonstration house also features some new ideas for garage lintels and gable ends. The lintel is made up with one ½" medium density plywood skin nailed to 2 x 4 framing. It spans a 16-foot garage door opening. This nailed component can easily be fabricated. The gable ends also have a single plywood skin on 2 x 4 flanges, but are of glued construction since they carry a heavier load.

Flexible system

The manufacturers do not necessarily plan that the research-demonstration house will be reproduced as built. The component systems, however, are readily available and are flexible enough to be used in almost any light frame design including homes, schools, and farm buildings.

Time and cost studies

The Small Homes Council will conduct time and cost studies so this type of component construction can be closely compared to conventional building methods.

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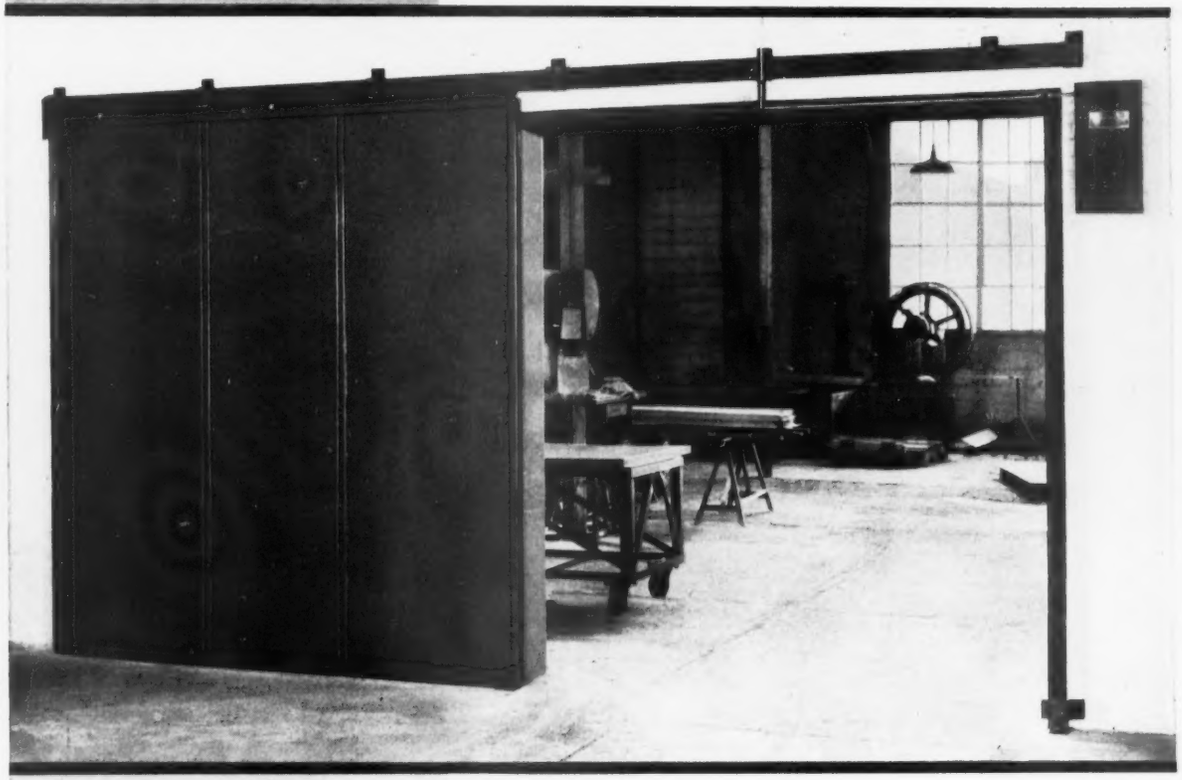

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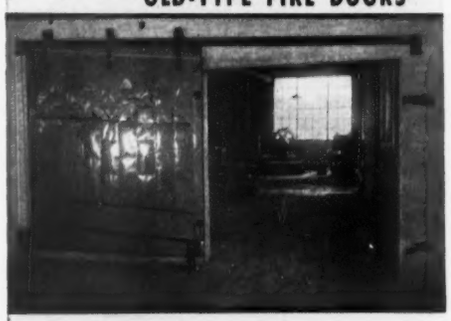

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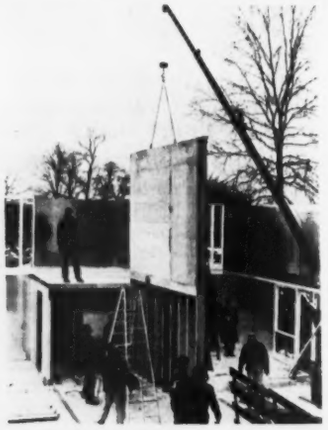
ASPECTS OF NAHB RESEARCH HOUSE

The research house of the National Assn. of Home Builders at East Lansing, Mich. featured a variety of structural and construction innovations and a series of product developments. One important aspect of the research program was to find new sources of economy in home building.

Above: Ridge panel being installed on roof of 1959 NAHB Research House, East Lansing, Mich.

Below left: Workmen raise second half of rear wall into position. Bottom half will serve as retaining wall. Middle: Two-story-high plumbing core wall is lowered into position. This wall was fabricated complete with frame and pipe in the plumber's shop. Right: View from driveway. Roof panels are shown stacked in foreground.



What was hailed as a milestone in the search for more modern methods of homebuilding, which will lead to better homes at lower cost to both builder and homebuyer, was reached recently with the completion of the two-story *NAHB Research House* at East Lansing, Mich. A cooperative venture of the NAHB Research Institute and the Residential Building Curriculum of Michigan State University, this new home was designed and developed by the NAHB Research Institute.

This house features many innovations and new products. One of these innovations is the extensive use made of stressed skin modular panels similar to those used in the NAHB Research House at South Bend, Ind. These panels are stated to offer remarkable opportunities to the builder and the architect for flexibility in design and construction.

Foam core panels

The panels feature a foam core of expandable polystyrene. The foam core is molded between interior and exterior structural building materials, forming a durable, attractive and lightweight "sandwich."

This core is moldable to almost every known facing material, which gives the architect enough latitude to permit a wide range in the variation of room individuality, and to give distinction to even the modest budget home.

From the standpoint of load-bearing capacity, the exceptional strength of these panels exceeds the standards established by the HHFA for load-bearing walls of conventional construction. Their remarkable lightness also permits ease and speed of handling which will appreciably reduce construction labor costs.

Effectiveness of the insulating qualities of the foam core in these panels has been proved through its use as an insulating medium for modern refrigerators and freezers. In the panels, this solid foam core offers a closed cell type of insulation that will not sag or pack with the passing of time, nor be affected by moisture.

Savings made possible

One important saving made possible to owners of homes built with these new modular panels, is the substantial reduction in utility costs. This is brought about by the excellent insulation value provided by the foam core in these panels.

The East Lansing NAHB Research House, which is the fourth in a series of NAHB research projects, contains 2,100 square feet of living area plus garage, terrace and service patio.

The first floor has a large living room with dining area, a family room with breakfast nook, kitchen, utility room and half-bath. On the second floor are two bathrooms and four bedrooms, one of which is designed for use, also, as a playroom.

A two-story high, foam-core panel wall was erected at the rear against the banked contour of the lot so that only the second story of the house has a rear exposure, with the lower half of the rear wall serving as a retaining wall. Foamed-core panels with plywood skins were used for the wall and roof areas. To provide a long-lasting and stable coating, aluminum foil was laminated to the plywood skins.

First floor slab

Foamed-core floor panels with cement-asbestos skins were used on grade in lieu of concrete. A gravel fill was laid and compacted, then a sand leveling bed was compacted over the gravel. The sand bed was then leveled and 6-mil polyethylene film,

was laid over the entire fill. The floor panels were then laid over this film, level with the top plate. Wooden splines and end rails, pressure-treated with Wolman preservative salts were used in these panels.

In the living room area, ¼" plywood underlayment was laid in mastic over these floor panels and ⅛" thick stabilized hardwood flooring strips laid over this.

In the entry way and half-bath on the first floor, new ceramic mosaic tile units were installed. These units were composed of 1" square ceramic tiles embedded in a vinyl backing to form the over-all 9" square block, which included the tile joints.

Structural window units combining fixed glass and insulated louver ventilation were used throughout in the construction of this house. Window and door frames were prefabricated and assembled with the wall panels. They consisted of fixed insulated glass units with jalousie ventilating units below. In the west elevation, heat-absorbing glass units were installed in two upstairs rooms, with fixed, vertical louvers at the sides of the windows.

Tough, new plastic coatings were used in prefinishing the surfaces of the exterior wall and roof panels. Brick-finish, foam-core, load-bearing wall panels, two stories high, were used for added effect on the right front section of the house.

Plumbing and heating

All-plastic hot and cold water plumbing lines and sewer and waste lines, as well as new type of individual sewerage unit and effluent field, were featured in the construction of this house. In addition, the plumbing core wall was fabricated complete with framing and pipe in the plumber's shop and trucked to the job site for erection with the structural panels.

Heating and air-conditioning is provided by a gas-fired furnace by means of a duct system incorporated in the floor structure between the first and second floors.

A surface mounted electric distribution system designed for future increased energy requirements is another feature of this new house. This was done by installing a hollow extruded plastic base molding which allows for additional wire capacity as and when it becomes necessary at a future date. This also provides additional space for installation of telephone wiring.

New design staircases

An open-tread staircase with unusual handrail and balustrade design is another novel and attractive feature of this house. The stairway is a plywood boxed girder, cantilever tread design with an aluminum handrail and baluster system, with a black vinyl handrail cap.

New, too, are the warped-skin, surface-mounted interior doors and the surface-mounted bifolding closet doors. The unique interior passage doors are pre-finished plywood construction in which the skins are separated through the center by insertion of a wood spline through its length. This produces a bow-shaped door.

Knocked-down, field-assembled system kitchen cabinets are another feature of this house. The cabinets are of a new design, with job-built construction utilizing aluminum extrusion support members with prefinished, fiber-resin and plywood doors.

Built on a 110' x 150' lot owned by Michigan State University, the house is occupied by a university faculty family, and continuing observations and tests will be made.

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72,237 square feet of Macomber V-LOK cut construction time on Iowa's Fort Madison High School.
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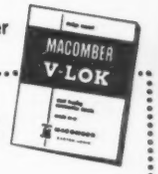

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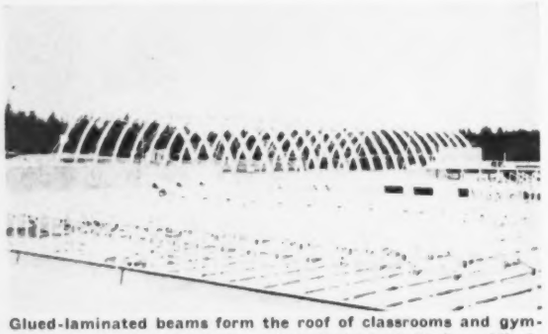
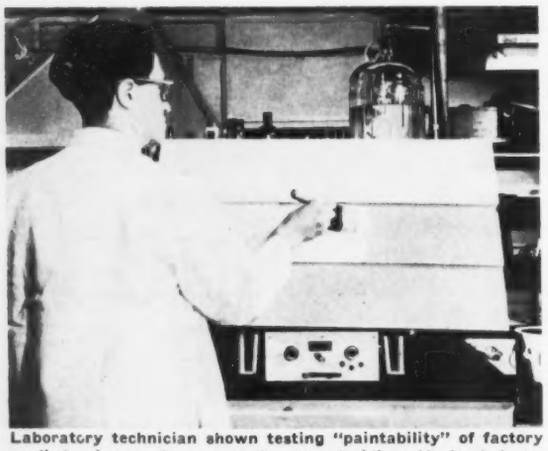
technology in wood

This brief article presents a quick summary of various developments in the technology of wood. From time to time, we publish various aspects of industry and association developments in order to keep the reader posted.



Glued-laminated beams form the roof of classrooms and gymnasium of Lynwood Junior High School, Belleview, Wash. Architect: William Arild Johnson, Everett, Wash. (Photo: National Lumber Mfrs. Assn.)



Laboratory technician shown testing "paintability" of factory applied prime surface coat of redwood siding. Harland Associations, nationally-known paint testing laboratory, proved surface more uniform, easier to brush and that less paint is required than ordinary job-applied primers.

MFMA grading revisions

Minor revisions of the Grading Rules for Northern hard maple, beech and birch flooring have been adopted by the Maple Flooring Manufacturer's Assn.

The first revision adds 3 per cent to the present percentages used in ascertaining the quantity of flooring required to cover a given area. The new percentages now eliminate the guesswork, heretofore used, in placing orders for hardwood flooring, according to the announcement. The revised rule reads:

To ascertain the number of feet of strip flooring required to cover a given area, find the number of square feet of floor space to be covered and add thereto the following percentages:

Face Widths	Thickness ½", 5/16" and 25/32"	Thickness 3/8"
Tongued and Grooved Flooring		
1½" face	53%	36-1/3%
2" face	40-1/2%	28%
2¼" face	36-1/3%	25½%
3¼" face	27%	not made
Jointed Flooring		
2¼" face	36-1/3%	not made
2½" face	23%	not made
3¼" face	27%	not made
3⅜" face	25-2/9%	not made
3½" face	24-3/7%	not made

The second revision concerns slight changes in the text interpreting the rules for two special grades which now read:

SELECTED FIRST GRADE LIGHT NORTHERN HARD MAPLE. This grade is selected for light color. The color tones in individual strips will vary somewhat, but after laying, this grade provides a luxurious "light" appearing floor.

SELECTED FIRST GRADE AMBER NORTHERN HARD MAPLE. This grade is selected for amber color. The color tones in individual strips will vary somewhat, but after laying, this grade provides a luxurious "amber" appearing floor.

FHA spec on specialty plywood

The Washington office of the Federal Housing Administration has outlined detailed specifications for the use of specialty-face softwood plywood in ⅜ and ½-inch nominal thickness used as combination sheathing-siding over studs 16" and 24" on center. The specifications are listed in materials release No. 303a.

The release pertains only to panels of these two nominal thickness in which any decorative cutting does not penetrate beyond the thickness of the face veneer.

According to the Douglas Fir Plywood Assn., which made the announcement, the way now is clear for builders to seek local acceptance for these products in homes with FHA-insured mortgages.

The FHA release indicates only that these products are suitable from a technical standpoint for the use indicated in the text of the release. It does not constitute an endorsement of acceptance, which must be secured on the local level.

A provision of the release sets up minimum thicknesses for panels of both nominal thicknesses and for core material of both panels. DFPA grade-trademarks for this class of production will include the notation "specialty panel" and, where applicable, core thickness information.

Testing factory-primed redwood

Factory-primed redwood, without a final coat, indicated ability to withstand approximately one year of exposure without failure, and even after this exposure, was in excellent condition to receive a final coat.

Weathering tests were part of a series conducted for the Simpson Redwood Co. by Harlan Associates, San Francisco, a nationally known paint testing laboratory. Redwood products also were tested for wicking, blister resistance, prime coat compatibility with finish paints, water repellency, primer coat thickness, and ease of finishing.

In every case, the test results substantiated and exceeded claims made for its prime coating. The company, in pursuing these tests, felt that the results were particularly important because dwelling units without a final coat are frequently caught by winter weather and do not receive the final coat until the spring or summer. The Harlan Associates' tests proved that the primed siding will arrest wicking—the capillary seepage of water between siding laps. Laboratory findings further revealed that there was one additional finish coat. Also resistance to fungi and mildew, blistering and ease of application of a factory-primed surface were investigated and the results found to be satisfactory.

Wood construction and schools

According to the National Lumber Manufacturers Assn., national building cost surveys consistently show that in most areas of the country, the cost of wood frame buildings covered by wood siding or brick is substantially less than that of brick-steel or brick-concrete. The August 1959 issue of the widely-read Boekh survey ("Building Costs," E. H. Boekh & Associates, Washington, D.C.) is cited to show that the material and labor costs for wood-brick commercial and factory buildings (this category also includes schools) are lowest in 27 out of a total of 37 areas, and that complete wood frame construction is lowest in the remainder. In most cases, the differences between these two and brick-steel or brick-concrete is substantial.

Architects and contractors who have built wood schools cite these reasons for the cost savings:

Formwork is eliminated when wood is used in place of poured concrete. Wood siding permits the building to be enclosed faster than is possible with brick or concrete block. Also, a wood school can be built with local labor, locally available materials, and with far few subcontractors, which permits the job to be organized with greater efficiency.

Wood is considered to have certain inherent advantages which provide additional benefits—greater insulation value, for example. According to tests reported by the University of Illinois Small Homes Council, the fuel bill of a one-story building walled in with eight inches of concrete and four inches of brick is 18 per cent higher than that of an identical building which has an uninsulated wood frame wall. When the spaces between the wood wall's framing are filled with insulation, this saving is reported as doubled.

A frequent misconception is that exterior painting of wood schools is a major expense item, according to NLMA. They indicate that the saving in construction and finance costs is far more than enough to balance whatever extra maintenance bills are generated during the building's operating life, and that the painting of exterior wood is actually a very minute portion of the annual maintenance cost.

At a one-story wood school in West Union, Ore., which has wood windows, doors, and cabinets, and some wood paneling on the walls, unusually detailed maintenance records were kept from 1953 to 1958. The average total annual cost of maintaining all wood in the building came to $156.54. Painting the

exterior cost an average of $139.59 per year. The school's total maintenance bill (including grounds maintenance) averaged $1,513.83. Maintenance of wood surfaces was the cheapest major item involved, and represented only about 10 per cent of the total.

Some wood is found in most schools, of course. The recent trend is toward using more of it for structural members, exterior and interior walls, roofs and floors. Cited as a good example is the Lynnwood Junior High School in Seattle. Designed for 1,200 pupils, it was built for a basic construction cost of $8.02 per square foot, 20 per cent below the state average. The entire roof is supported on glue-laminated arches and beams. The auditorium-gymnasium section is framed by 29 arches; they provide a clear span of 88′ and rise to a height of 44′. Each arch weighing 2½ tons, was installed in 90 minutes or less. Says Lynnwood's architect, William Arlid Johnson, an experienced school designer, "We have used glue-laminated arches and beams on scores of schools, and their advantages and economies have been proven. We know that wood construction is more economical and provides more efficient, safer and more attractive schools. Laminated timber construction is becoming more economical in all parts of the country."

The growing popularity of the wood school largely parallels the evolution of one-story school design and the emergence of a new attitude toward fire safety.

According to NLMA, it used to be that any building was considered "fireproof" if it was built of so-called "non-combustible" materials. The fire at the General Motors plant in Livonia, Mich., several years ago, thoroughly discredited that notion, however. This plant was rated by the Factory Insurance Assn. as a "non-combustible" building with "non-combustible" machinery, using "non-combustible" materials, and producing a "non-combustible" product. Yet the Livonia plant was completely gutted.

The modern approach to fire safety is that any building depends, essentially, on three factors: the number and location of exits; the rate at which its components burn; and their resistance to failure when subjected to heat.

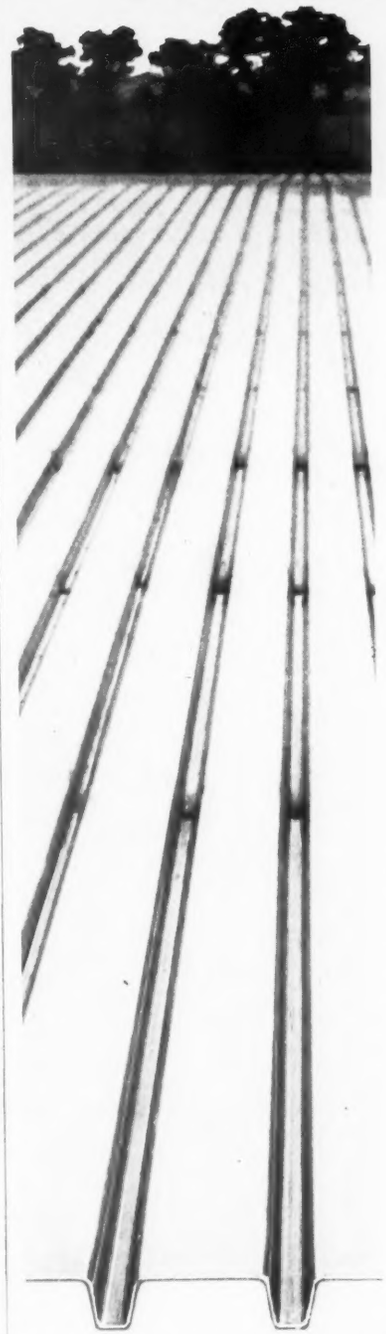
When structural steel and structural wood members are subjected to the same fire, according to the American Institute of Timber Construction, the steel collapses long before the wood does. A heavy timber beam will burn, of course, explains AITC, but so slowly that it continues to provide normal support for a far longer period than is required in modern school building codes.

This contention is backed up by the U.S. Forest Products Laboratory, which reports in its "Wood Handbook," that "Heavy timber construction is fire-resistant because of the slow rate of burning of wood in massive form." Adds the National Fire Protection Committee on Safety of Life:

". . . the one-story school, so arranged as to afford direct access to the outside from any part of the building is, in the opinion of the committee, the safest design, and when this form of design is used, there is little restriction as to the type of construction."

This new attitude toward fire safety permits builders and architects to cut school construction costs significantly by using wood as a framing and structural material, instead of just as trim. With the need for classrooms so great, the wood school, is stated by NLMA to represent an opportunity worth investigating.

GRANCO ROOF DECK



ALL THE FEATURES YOU WANT... IN ONE PRODUCT

Let's be honest. Today, *all* brands of steel roof deck do a useful, high-quality job! But to help you find the *one* product offering the greatest number of benefits, we invite you to check over this list of Granco Steel Roof Deck features, then mail the coupon for more detailed information.

TOUGH FINISH—Flint-hard enamel, "flow coated" over cleaned, phosphate-coated steel deck, is baked on at 350° F. for 20 min. Rust-preventive finish resists scratches, prevents corrosion.

LONG SHEETS—up to 21′ 6″—permit long continuous spans, stronger construction.

STRONG—New sheet design provides greater strength and load-carrying capacity.

FAST PLACING—Sheets cover up to 43 sq. ft. Wide sheets mean fewer laps and welds.

YEAR-ROUND CONSTRUCTION—Place Granco Roof Deck in any weather that permits outdoor work.

SIMPLIFIED SYSTEM—Place and weld sheets to framing. Apply insulation. Add built-up roof. Fast!

EASY TO WELD—Wide rib openings speed plug welding from top side.

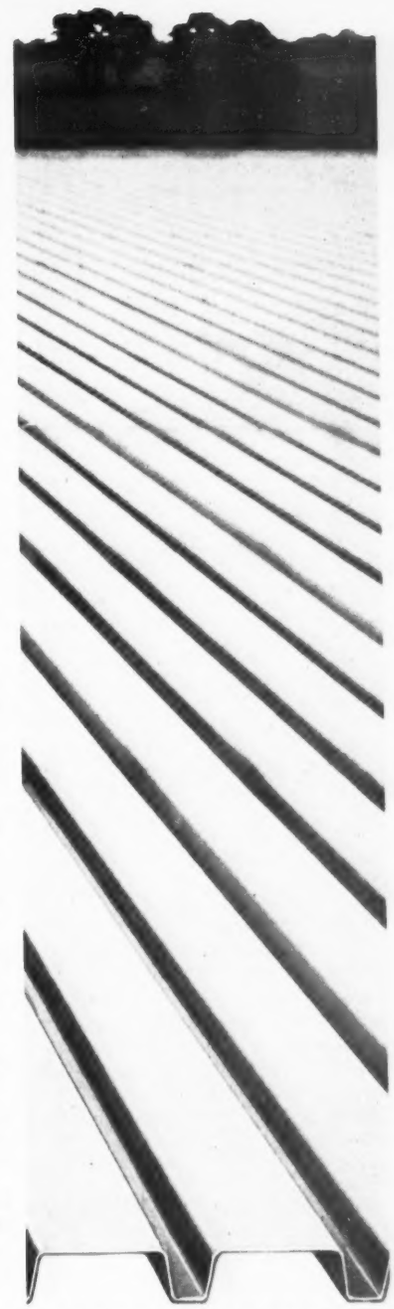
FIRE-RESISTANT SYSTEM—often means lower insurance rates.

FLARED END—means simplified nesting.

20-YEAR ROOF BONDS—obtainable on Granco Roof Deck with 1″ insulation board.

CHOICE OF GAGES—18, 20 and 22 gage meet wide range of span-load conditions.

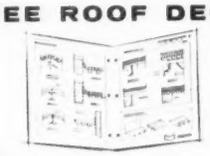
ECONOMICAL—Structures designed for Granco Roof Deck often save 5¢ to 10¢ per sq. ft. in framing cost over heavier-type decks.



MAIL COUPON FOR FREE ROOF DECK PRODUCT MANUAL

FROM THE GRANCO® FAMILY

TUFCOR® • COFAR® • E/R COFAR
CORRUFORM® • UTILITY DECK
VIN-COR • STRUCTUR-ACOUSTIC
STAY-IN-PLACE BRIDGE FORMS
GUARD RAIL • PAVEMENT JOINTS



Illustrated Roof Deck Product Manual gives ridge and parapet, eave and gable details. Load tables, properties, specs., installation instructions.

GRANCO STEEL PRODUCTS CO.
6506 N. Broadway, Dept. AE-6011, St. Louis 15, Mo.
A Subsidiary of GRANITE CITY STEEL CO.

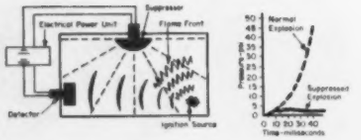
Galvanized Steel

Name _____
Firm _____
Address _____
City _____ *State* _____

Circle 117 for further information

PRODUCTS, EQUIPMENT, MATERIALS

Report of recent developments by industry, based on data furnished by mfrs. Inquiry cards for further information face pages 1 and 58.



ACTIVE EXPLOSION PROTECTION SYSTEM

MFR'S DESCRIPTION: the *Fenwal Explosion Protection System* is stated to offer active, rather than passive protection against accidental explosions. System detects an explosion at instant of its inception, and acts within a few thousands of a second to snuff out blast before it becomes effective.

USES: system requiring suppression of incipient explosions.

SPECS/FEATURES: based upon a British World War II development, system works on principle that there is a finite lapse in time between a blast's ignition and the build-up of destructive pressures. Each installation is unique—subject to local conditions. System uses pressure detectors and radiation detectors and a variety of protection devices which may consist of suppressors, isolation valves or vents.

AIA FILE NO. 31-D-9

MFR: FENWAL INC.

Circle 200 for further information

PRIME-COATED HARDBOARD

MFR'S DESCRIPTION: tough, weather-resistant exterior type prime-coated, tempered hardboard.

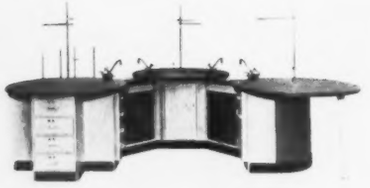
USES: exterior siding, soffits, gable ends, novelty panels, patio fences, and other exterior applications.

SPECS/FEATURES: coating is resin base material which primes hardboard for finish painting with brush, roller or spray. Available in smooth, striated, U-grooved, and combinations of these surface treatments. Comes in 4′ x 6′, 7′, 8′, 9′, 10′, 12′, and 16′ sizes, and in ¼″ smooth or striated, and $\frac{5}{16}$″ U-groove and striated.

AIA FILE NO. 19-A-4

MFR: SILVATEK DIV., WEYERHAEUSER CO.

Circle 201 for further information



DECORATIVE LABORATORY FURNITURE

MFR'S DESCRIPTION: the "Science-Circle" laboratory furniture features a break with traditional austere design.

USES: science rooms and laboratory installations.

SPECS/FEATURES: has circular work surfaces in contemporary plastic finishes on a variety of natural white oak bases and interconnected by stainless steel sinks. Each unit is custom-assembled to serve 8 or 12 students with hot and cold water faucets, gas cocks and electrical outlets. Functional appearance and design cited to meet requirements of any style or size science room.

AIA FILE NO. 35-E

MFR: JOHN E. SJOSTROM CO.

Circle 202 for further information

FIBERGLASS ASTRO-DOMES

MFR'S DESCRIPTION: *Astro-Domettes* have been developed for use by educational institutions in astronomical study.

USES: for high schools, colleges and universities.

SPECS/FEATURES: these domical units are manufactured on an assembly line basis thereby offering production quality yet modest cost. Sections are stamped or molded, dome components are uniform and interchangeable. Units are available in sizes of 8′, 10′, and 12′ outside diameters. A 10′ unit weighs approx. 500 lbs. Each unit is equipped with an "up and over" shutter system and is manually rotated. Electric drives are available as an accessory.

AIA FILE NO. 12-J

MFR: ASTRO-DOME INC.

Circle 203 for further information

COOKING CENTER WITH STAINLESS DOORS

MFR'S DESCRIPTION: *Lectro-Host*, a free standing electric range with built-in look, now available with stainless-steel doors.

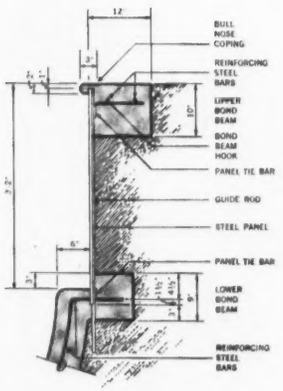
USES: adaptable for project homes, apartments, motels and other places where space is limited.

SPECS/FEATURES: provides compact cooking center, with four-element cooking top and two bake or broil ovens. Optional base cabinet and kitchen exhaust blower with hood available. Interiors feature porcelain enamel finish, tilt-up stay-up bake elements, and removable oven rack supports. Hinged utility drop shelf provides 38" x 22" work space. Various state controls, space saving features also stressed. May be "built-in" or wall hung. One single lead wire required. Total connected wattage is 13.4 KW. Dimensions are 39⅞" wide x 38⅝" high x 27⅞" deep. Basic units retail priced from $571.50 to $589.50. Literature available.

AIA FILE NO. 35-C-11

MFR: THERMADOR ELECTRICAL MFG. CO.

Circle 204 for further information

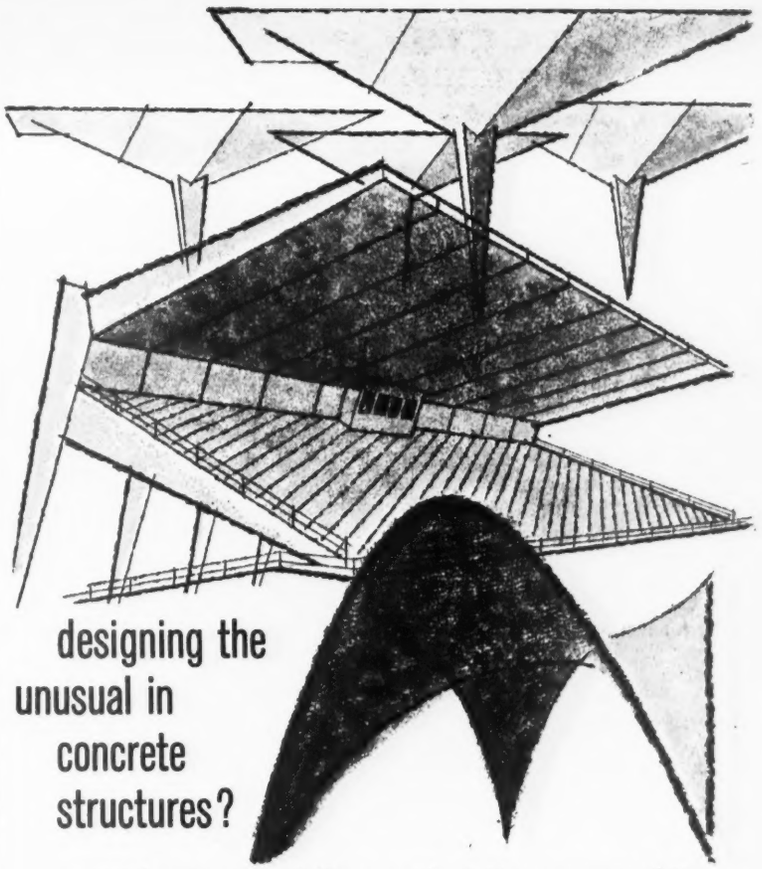


LOW-COST ALL-WEATHER SWIMMING POOL

MFR'S DESCRIPTION: low-cost all-weather swimming pool that can be sold in retail outlets and then assembled in the ground by a building contractor using standard construction equipment and methods.

USES: residential and commercial.

SPECS/FEATURES: the pool is a standardized construction unit that is installed by standard building methods thereby bringing it out of the specialty field. Features a steel-panel sidewall combining vertical strength with horizontal flexibility and embedded in a concrete bottom. Ribbed sidewall withstands freezing and thawing pressures so pool may serve as an ice-skating rink in winter



designing the unusual in concrete structures?

remember to protect them against the ravages of time

Even the most delightful flight of fancy in prestressed concrete can eventually become unsightly through erosion and corrosion. Sometimes sooner than we like to think. One simple, low-cost assurance of long life is to specify vulnerable surfaces be coated with Thoroseal. This fine cementitious material will protect against moisture penetration and usual corrosion and it becomes a decorative surface in any of several colors, gray or white. Add to your files our specification guide describing Thoroseal and all other Thoro System products for masonry protection. Use the coupon below.

Please send me your free new specification guide.

Name_____

Company_____

Address_____

Standard Dry Wall Products, Inc.

Box X-15 New Eagle, Pa.

Plants at New Eagle, Pennsylvania and Centerville, Indiana

Circle 118 for further information

months. Will be marketed in kit form. Kit for 18′ by 36′, in-the-ground pool is priced at $1,850 plus $700 to $900 installation cost. Designed to be installed by regular crew using regular equipment. Included are all components and related accessories.

AIA FILE NO. 35-F-2

MFR. CORALOC INDUSTRIES, INC.

Circle 205 for further information

DOORS & ACCESSORIES

MOLDINGS, PANELING, & DOORS IN MATCHING GRAIN

MFR'S DESCRIPTION: line of mass produced prefinished grained doors with matching moldings and wall panelings.

USES: residential and commercial applications.

SPECS/FEATURES: door surfaces of *High-Pressure Laminex*, high-density composition material formed under great pressure, are grained and *Poly-Clad* finished resulting in protection against scuffs, scratches, stains, and fading. English Walnut and Rock Maple doors are being offered as standard, with wide variety of other grains available to order. Matching *Poly-Clad Plywall* prefinished wood moldings and wall paneling permit complete prefinished installation.

AIA FILE NOS. 19-E-1, 19-E-6, 16-C

MFRS: THE BELLWOOD CO., DIV., PACKARD BELL ELECTRONICS; PLYWALL PRODUCTS CO.

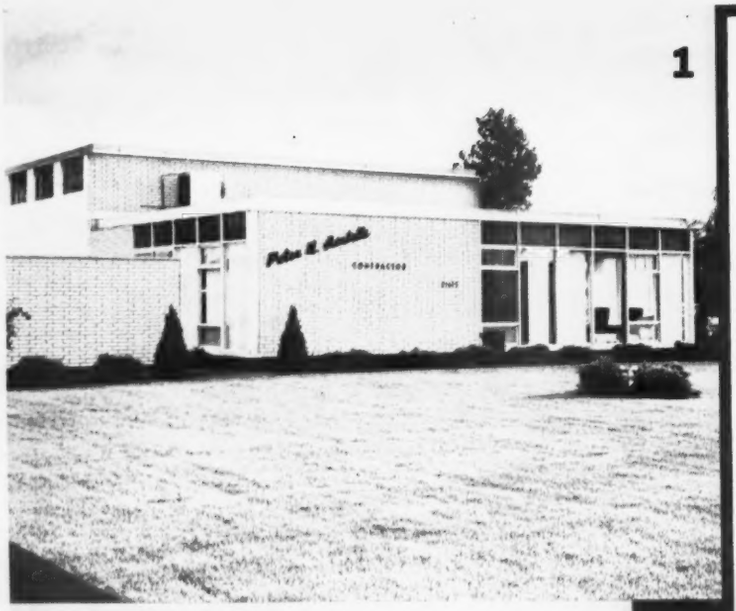
Circle 206 for further information

CUSTOM SIZE OVERHEAD DOOR AVAILABLE

MFR'S DESCRIPTION: special line of non-standard size overhead doors for custom installations are being made available.

USES: residential, commercial and industrial installations.

SPECS/FEATURES: design of units features track detail to provide tight and weather-resistant fit between jamb and door, yet give free and in-



MAHON MULTI-USE LONG-SPAN M-DECKS...

Cross section of Mahon Long-Span M-Deck combined roof-ceiling with troffer lighting and acoustical treatment.

MAHON LONG-SPAN M-DECK SECTIONS

SECTION M1-0B
OPEN BEAM DEPTH 3", 4½", 6" or 7½"

PERFORATED AREA

SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

A NEW SECTION M1-0B (Troffer)
CEL-BEAM DEPTH 4½", 6 or 7½"

These are the standard M-Deck types now in manufacture by Mahon. Special-form sections can also be supplied.

Circle 119 for further information

. . . give you big structural advantages— even in small-building construction

Mahon Long-Span M-Decks furnish architects and engineers with roof sections of functional versatility that are ideal for any project, any budget—big or small. These steel sections provide a combined roof-deck system **and** finished ceiling that means real savings in specifying, erecting and service. Long-Span (truss-to-truss or wall-to-wall) M-Decks, quality made by Mahon, have a high strength-to-weight ratio for use as structural members and are supplied in metal gages and gage combinations for either flat or beamed ceilings. To suit your particular need, M-Decks are also available with or without recessed troffer lighting or acoustical treatment and for use as air-conducting or air-diffusing cells. Get the full story on M-Decks from your local Mahon representative, Sweet's Files or write for Catalog LSD-60.

1 Mahon Long-Span M-Deck was meaningfully used in this "twin" facility at Livonia, Michigan. For the offices of contracting firm, Peter H. Acitelli, Inc., with its . . .

2 . . . attractive reception area, Mahon Long-Span M-Deck was used as structural members to span wall-to-wall, as a roof-deck system and also served as a . . .

3 . . . finished acoustical ceiling in offices—flat ceilings in shops of the R. V. Tool Co. as well. Architects: Wakely-Kushner Associates, St. Clair Shores, Michigan.

MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Walls (in natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions and Roof Decks
- Permanent Concrete Floor Forms

CONSTRUCTION SERVICES

- Structural Steel-Fabrication and Erection
- Steel Fabrication-Weldments
- Geodesic Domes-Fabrication and Erection

Steel *for strength . . . economy . . . versatility*

THE R. C. MAHON COMPANY
Detroit 34, Michigan

Manufacturing Plants—Detroit, Michigan and Torrance, California.
Sales-Engineering Offices in Detroit, New York, Chicago, Torrance and San Francisco.
Representatives in all principal cities.

Speeding American Construction with Metal Building Products, Fabricated Equipment and Erection Services

MAHON

Circle 119 for further information

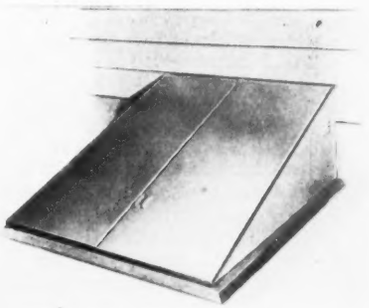
PRODUCTS, EQUIPMENT, MATERIALS

stantaneous and automatic, frictionless operation. Various arrangements of panel section possible with or without vision panels. Doors may be provided for torsion or extension spring operation, controlled manually, electrically or by chain hoist. High clearance and high lift racks available. Exterior grade, old growth Douglas fir construction. Hardware given protective finish and is stated as corrosion resistant. Aluminum doors, grilles and shutters also available.

AIA FILE NO. 16-D

MFR: BETTER-BILT DOOR CO.

Circle 207 for further information



STEEL CELLAR DOOR FEATURES ASSEMBLY EASE

MFR'S DESCRIPTION: a steel cellar door introduced which can be installed up to 50 per cent faster than any comparable basement hatchway according to mfr.

USES: residential and related building installations.

SPECS/FEATURES: only six nuts and bolts required to assemble door, all holes for foundation securing may be drilled with door in place and no caulking on door itself is necessary. Larger unobstructed opening, side ventilators to reduce condensation, hand or foot released safety catch, and extra deep header and side panel flanges for weather protection. New latch for tamperproof locking. Three sizes available in 12 ga. steel, retailing for $64, $67 and $71, and one model in 16 ga. steel for $59.95.

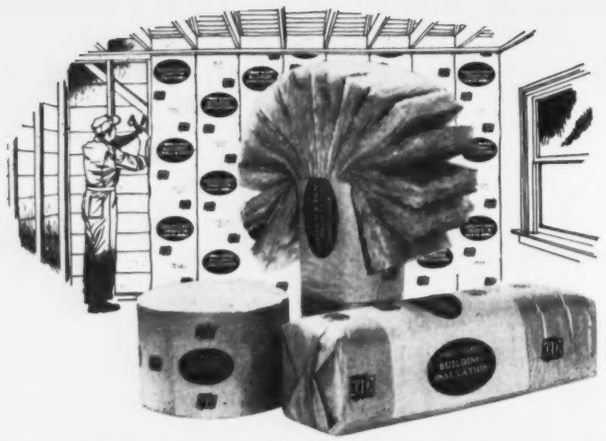
AIA FILE NO. 16-A

MFR: GORDON MANUFACTURING CO., INC.

Circle 208 for further information

WOOD FIRE DOOR WITH PLASTIC FACES

MFR'S DESCRIPTION: a fire door with high pressure plastic laminate faces has been developed and has been approved by Underwriters Laboratories, Inc.



ANNOUNCING A NEW STANDARD OF QUALITY IN FIBER GLASS BUILDING INSULATION!

The first time you see G-B Fiber Glass Building Insulation you will know that here is a product of the highest quality. Its smooth, uniform thickness . . . its ruggedness and resiliency . . . its outstanding thermal characteristics . . . and its ease of application tell you that G-B Fiber Glass Building Insulation is setting a new standard of quality in the fiber glass building insulation field.

Thanks to recent expansions, Gustin-Bacon has more than tripled production facilities of G-B Fiber Glass Building Insulation. This means that a complete line of this superior building insulation is now available in unlimited quantities throughout the central United States.

For an informative 12-page brochure and product samples, write today to GUSTIN-BACON MFG. CO., 250 W. 10th St., Kansas City, Mo.

Circle 120 for further information

Look!

moldings that match

in colors and patterns of all plastic surfacing materials

Kalwood inside corner matching molding.

Kalwood Matching Moldings are made of aluminum — with a thin, durable, matching veneer of wear-resistant plastic, permanently bonded to exposed surfaces. ALL patterns can be matched in Formica, Pionite, Panelyte, Consoweld for any surfacing material.

Since Kalwood moldings allow for settling and contraction, you never have to worry about buckling, curling, or joint separation. Available in shapes to meet every trim requirement. Write for descriptive literature. Keller Products Inc., 43 Union St., Manchester, N. H.

keller products inc.

Dept. A-110, 43 Union St., Manchester, New Hampshire

Circle 121 for further information

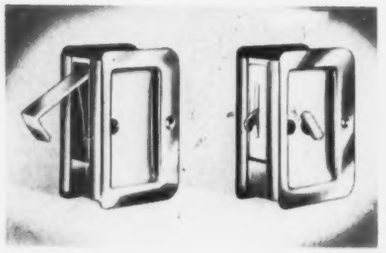
USES: hospitals, schools and other public institutions, as well as offices and apartment buildings.

SPECS/FEATURES: each side of door faced with *Micarta*, rated by UL for both Class "B" vertical openings (one hour's resistance to open flame) and Class "C" room and corridor partition openings (three quarter hour rating). Stress is made of combination of fire protection with pleasing appearance and ease of maintenance. Units may be shipped to installation sites prefitted and machined for approved hardware. Full range of colors available for new and match of existing work. New rating means institutions will be able to install matching doors that will require no on-site fitting, push plates or kick plates throughout an entire building.

AIA FILE NO. 19-E-13

MFR: UNITED STATES PLYWOOD CORP.

Circle 209 for further information



BRASS POCKET DOOR LOCKS

MFR'S DESCRIPTION: line of pocket door locks with nylon latches.

USES: sliding doors.

SPECS/FEATURES: available in five finishes: polished brass; satin brass; polished chrome; satin chrome; and bronze. Series include privacy, communicating, exit locks and side and edge pulls, all of which are adjustable for 1⅜" doors and are completely reversible.

AIA FILE NO. 27-B

MFR: KENNATRACK CORP.

Circle 210 for further information

COMPONENT CONSTRUCTION

COMPONENT SYSTEM FOR DRY WALL CONSTRUCTION

MFR'S DESCRIPTION: *Steelfast*, a research project designed to develop an advanced system for installing dry wall that offers home builders significant savings in construction time and costs is announced.

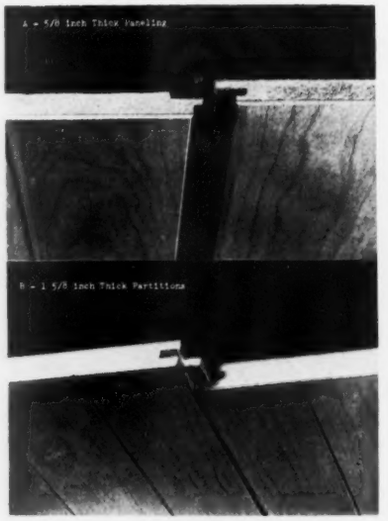
USES: residential construction.

SPECS/FEATURES: system employs cold formed steel members at all corner and ceiling joints. Plumb and level lines are assured because *Steel-Fast* member is nailed to the top place and only one surface of the corner steel post. Dry wall panels are held evenly in place at the edges by the steel member instead of following contour of uneven ceiling joists or out-of-plumb corners. Special bracket for joining members automatically aligns them where they meet at inside and outside corners. System is considered to be competitive with other methods of installing dry wall. The system was developed by the NAHB in cooperation with the United States Steel Corp.

AIA FILE NO. 23-J

ASSN: NATIONAL ASSN. OF HOME BUILDERS

Circle 211 for further information



COMPONENT PARTITION AND WALL ASSEMBLIES

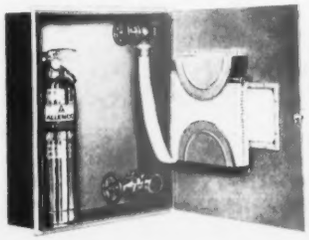
MFR'S DESCRIPTION: these two products, *Easy Wall Partition and Paneling* are designed for planning, construction and assembly ease and economy.

USES: residential and small commercial construction.

SPECS/FEATURES: manufactured in 2' x 8' panels with prefinished wood grain faces in either *Cherry Mocha*—a dark brown, or *Cherry Mist*—a silvery grey. A washable vinyl finish is provided that will not stain or fade. Each 1⅝" thick partition is faced on both sides with wood grain hardboard. Thick, rigid core of insulating board provides finished wall with heat and sound insulation values and strength. To assemble new wall using partitions, ½" x 1⅝" plates are nailed to floor and ceiling. Partitions slide in place and are joined with plywood splines for joint rigidity. Plywood splines and plates are packaged with partitions. The ⅝" wall-paneling, laminated to ½" insulating board, is finished one side and is

stated to maintain save advantages as partition material. Both products are competitively priced with other pre-finished products. Price of partitions is expected to cost 95¢ psf and paneling in 38¢ psf range.
AIA FILE NO. 19-E-6
MFR: SIMPSON LOGGING CO.
Circle 212 for further information

FIRE PROTECTION



TRIMLESS FIRE CABINETS CUT SPACE REQUIREMENTS

MFR'S DESCRIPTION: compactness combined with good design in four models of Trimless *Hozegard* Fire Protection Cabinets state to require 35 per cent less area than other cabinets.
USES: fire-protection installations.
SPECS/FEATURES: units can be installed on any plane including the floor. Flush mounting and elimination of trim reduce exposed portion to size of door. Visible part of one unit, for example, is 200 sq. in. less than comparable models with trim, but with less equipment. Cabinets feature knockouts for installation of 2½" pressure restricting angle valves and include 180° swing, foul proof hose racks mounted on door instead of cabinet interior. Racks accommodate from 25' to 100' of regular linen or cotton rubber-lined fire hose. Cabinet and equipment with mfr's exclusive hose clip make unit 100 per cent U.L. listed. Finishes in steel, aluminum, stainless or bronze with continuous hinges and chrome-plated handles. Optionals include flush steel doors, rosette vents, break glass latch shield and chrome-plated accessory fittings.
AIA FILE NO. 29-E-2
MFR: W. D. ALLEN MANUFACTURING CO.
Circle 213 for further information

HIGH TEMPERATURE INSULATION

MFR'S DESCRIPTION: a thermal insulation, known as *Calsilite-Hi*, that is stated to withstand heat up to 1,800° F indefinitely and has advantage of being an industrial fireproofing material has been developed.
USES: insulation of piping and equipment in all types of plants, and for fireproofing walls, partitions and ceilings in refineries and chemical processing plants.
SPECS/FEATURES: product is a calcium silicate compound combined with asbestos fibers and other materials. Available in half-sectional, three segmental and block form, it keeps its strength when wet and returns to its original thermal efficiency when dry. Other advantages cited are resistance to most chemicals and alkalies in industrial concentrations. Designed for use on high temperature steam lines and equipment up to 1,250°F.
AIA FILE NO. 37-D-2
MFR: THE RUBEROID CO.
Circle 214 for further information

PLASTICS APPLICATIONS

WOOD PATTERNED PLASTICS SHEETS

MFR'S DESCRIPTION: addition to line of wood grained plastics sheets *Washington Cherry*, pattern 1330.
USES: counter tops, paneling, etc.
SPECS/FEATURES: available in standard and postforming grades. Comes in all regular sheet sizes. Samples on request.
AIA FILE NO. 23-D
MFR: RALPH WILSON PLASTICS, INC.
Circle 215 for further information

MODULAR PLASTIC LUMINAIRE UNIT

MFR'S DESCRIPTION: *Photometric* is styled with an injection molded 4' refractor in styrene or acrylic, easily removed without tools for relamping or cleaning.
USES: designed for schools, offices, libraries, drafting rooms, laboratories and residences.
SPECS/FEATURES: available in 4' and 8' lengths and is less than 4" deep for either close ceiling or stem mounting. Sliding clamp hanger facilitates stem mounting. Units being modular in length, when connected in luminous row, show no opaque metal between units to cause distracting contrast. Over-all efficiency is given as 76.5 per cent with good brightness control in direct glare zone. No-drip ballasts are standard. Steel parts are white enameled. No visible screws, nuts, bolts, rivets, welds or knockouts to mar over-all appearance.
AIA FILE NO. 31-F-21
MFR: THE WAKEFIELD CO.
Circle 216 for further information

3-DIMENSIONAL LETTER BOARD FOR BUILDING DIRECTORIES

MFR'S DESCRIPTION: changeable letter board, featuring 3-dimensional, plastic letters which stand out ⅛" from surface of board.
USES: office buildings, schools, public buildings, etc.
SPECS/FEATURES: backboard is constructed of satin-finished, styrene pegboard, laminated with tempered masonite for extra strength. Pliable, plastic letters snap quickly and firmly into pegboard at press of finger. Uniform spacing is assured. Both backboard and letters are completely washable. Colors of white or black are available in backboard, but it can be painted with any color. Sizes are cut to order. Letters come in ½", 1¼", and 2" sizes in black, white or red. Aluminum border is available in eight baked-enamel colors.
AIA FILE NO. 24-C
MFR: BERLOC MANUFACTURING CO.
Circle 217 for further information

Rosboro Timber Fabrication

Rosboro owns and logs its own timber from a sustained yield of old growth Douglas Fir. This assures a dependable and uniform quality for all types of structures.

Rosboro's fabrication crew has almost two decades of experience in engineered timber fabrication. The department is a unit of our mill at Springfield, Oregon, taking advantage of a large inventory, storage and shipping facilities. Rosboro can fabricate all types of solid sawn trusses and roof structures to meet your needs for modern engineering in wood.

Send for Free booklet

ROSBORO
LUMBER COMPANY
SPRINGFIELD, OREGON

Please send me your Timber Fabrication folder

Name_____
Firm_____
Address_____
City_____ Zone_____
State_____

Circle 122 for further information

PLASTIC COATED CHAIN LINK FENCING

MFR'S DESCRIPTION: in use in Europe for ten years, plastic (PVC) coated galvanized wire for chain-link fencing is available.

USES: enclosures for industrial plants, park areas, gardens, athletic fields, tennis courts, etc.

SPECS/FEATURES: has been subjected to testing in immediate vicinity of acid producing industries. Color fastness, not affected by temperature extremes, attractive appearance in wide range of colors are among advantages cited. Comprehensive specification on chemical and thermal resistance of product, known as *Color-Lock*, is available.

AIA FILE NO. 38-M

MFR: COLOR-LOCK CORP.

Circle 218 for further information

PLASTIC SURFACED ACOUSTICAL TILE

MFR'S DESCRIPTION: an acoustical ceiling tile with a vinyl-plastic surface is announced.

USES: sound control.

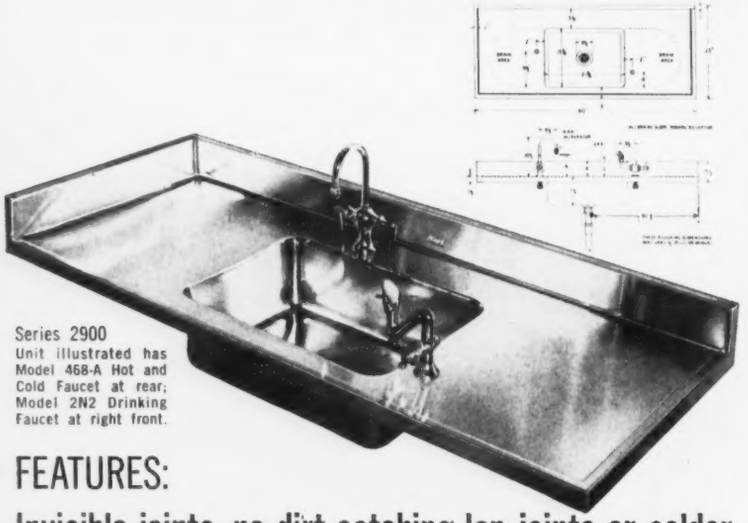
SPECS/FEATURES: available in textured or smooth surfaces, both white in color that combined can produce a variety of interesting patterns. Behind plastic shield, in a wood fiber tile are hundreds of perforations for 70 per cent absorbtion of noise that reaches ceiling. Sizes: 12" x 12" with beveled-butt or tongue-and-groove edge, and 12" x 24" with tongue-and-groove edge. The latter is scored to make it appear 12" x 12". Price competitive with fissured wood fiber ceiling tiles.

AIA FILE NO. 39-B

MFR: UNITED STATES GYPSUM CO.

Circle 219 for further information

HAWS ONE-PIECE,
STAINLESS STEEL
DECK TOP & RECEPTOR UNIT



Series 2900
Unit illustrated has Model 468-A Hot and Cold Faucet at rear; Model 2N2 Drinking Faucet at right front.

FEATURES:

Invisible joints, no dirt-catching lap joints or solder seams, raised and rolled pre-formed edges, 4-inch backsplash, choice of right or left endsplash, sloping decks, heat resistant underseal, choice of Haws faucet fixtures, vandal proof fixture locking, chrome plated trim, famous Haws quality!

Write for FREE, fully-illustrated 1961 HAWS CATALOG, and Model 2900 Specification Sheet.

HAWS DECK TYPE FOUNTAINS

Manufactured by HAWS DRINKING FAUCET COMPANY
1441 FOURTH STREET BERKELEY 10, CALIFORNIA
EXPORT DEPARTMENT: 19 Columbus Avenue, San Francisco 11, California, U. S. A.

Circle 123 for further information

PLASTIC FENCING MATERIAL

MFR'S DESCRIPTION: mfr claims its plastic fencing material combines privacy, complete color range, attractive appearance and protection at substantial savings over comparable materials.

USES: residential and related landscape and fencing uses.

SPECS/FEATURES: made of saran, product is also available in special narrow gauge version produced specifically as stripping and stuffing material for chain link fencing. Other uses of material, aside from straight fencing, are as patio covers, room dividers, pool enclosures, mulch bins, etc. Weather-resistance, non-peeling or non-rotting cited as advantages.

AIA FILE NO. 38-M

MFR: WEBLITE, INC.

Circle 220 for further information

ELECTRICAL RECEPTACLES

RECEPTACLE EAR CLIPPING UNNECESSARY

MFR'S DESCRIPTION: a "key" used in the adjusting ring has been added to mfr's line of #190 steel adjusting floor box series.

USES: electrical receptacle assemblies.

SPECS/FEATURES: "key" unit drops into place in adjusting ring making ear clipping of receptacles unnecessary. It makes use of most popular styles and size receptacles possible by simply dropping "key" into slots provided for in adjusting ring and then selected receptacle is placed with receptacle ring.

AIA FILE NO. 31-C-71

MFR: FULLMAN MANUFACTURING CO.

Circle 221 for further information

PENDANT-TYPE EXPLOSION PROOF RECEPTACLE

MFR'S DESCRIPTION: a pendant type explosion-proof receptacle, the *CPSHC* unit of the *CPS* series of explosion-proof units has been designed for ceiling mounting.

USES: hospitals or installations with similar requirements.

SPECS/FEATURES: entails dead-end contact feature. All arcing, if any, confined within a plug combustion chamber of dead-end receptacle. Live contacts exposed to atmosphere which may contain volatile, inflammable, anaesthetical fumes or explosive vapors are eliminated. Polished aluminum finish with ½" hub with set screw and rate as 20 amp, one hp, 115 or 230 v.; 60 cycle AC, single phase and two-wire, three pole circuit.

AIA FILE NO. 31-C-71

MFR. APPLETON ELECTRIC CO.

Circle 222 for further information

FURNITURE

ARCHITECTURAL PLANTERS FOR INTERIOR FURNISHING

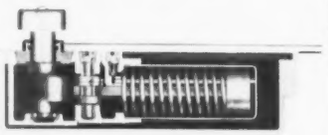
MFR'S DESCRIPTION: line of *Duk-It* architectural planters designed to

DIXIE...the newest of the finest Quality-Engineered Hydraulic Floor Hinges

QUALITY CRAFTSMANSHIP—machined to closest tolerances

QUALITY MATERIALS—case-hardened parts for long wear

QUALITY SERVICE—to hinge, hold open, close, and control interior doors



Dixie Series—part of a complete line by Bommer. Write our executive offices for a new catalogue on checking floor hinges.

BOMMER
SPRING HINGE CO. INC.
EXECUTIVE OFFICE AND PLANT: LANDRUM, S. C.

Sales Offices and Warehouses 263 Classon Ave., Brooklyn, N. Y. 180 N. Wacker Drive, Chicago, Ill.

Circle 124 for further information

ALUMILITED COUNTER DOORS—BY **COOKSON**
—Best for Schools and Every Need

WORLD'S MOST WIDELY SPECIFIED COUNTER DOORS FOR
* SCHOOLS * CAFETERIAS * OFFICES * SHOPS & STORES
* POST OFFICE WINDOWS * SERVICE ENTRANCES
* TICKET WINDOWS * NEWS STANDS

Write for Bulletin 902. Contains detail drawings and complete architectural specifications.

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San Francisco 10, California
Sales and Service Representatives Throughout the U. S. A.

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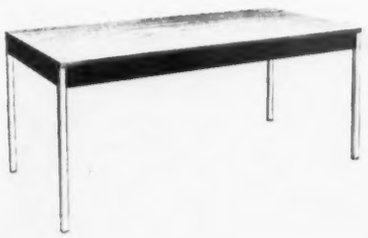
Circle 125 for further information

PRODUCTS, EQUIPMENT, MATERIALS

enhance interiors with integrated color and finish schemes.
USES: interior decor of public buildings, offices, banks and residences.
SPECS/FEATURES: simplicity of design, emphasizes contemporary character in matched-grain walnut and *Formica*. Rectangular tubular legs of aluminum or brass with adjustable level gliders. Feature heavy construction to support weight of large amounts of soil necessary for plant growth. Liners of galvanized iron are coated both sides with vinyl. Liners have slide-up handles for removal. May be supplied without liners. Available in three stock sizes: 14" x 14" x 18", 18" x 18" x 16" and 14" x 20" x 18". Also two custom sizes: 18" x 18" x 48" and 18" x 16" x 60". Custom sizes available on order.
AIA FILE NO. 28-B
MFR: MCDONALD PRODUCTS CORP.
Circle 223 for further information



CONTEMPORARY STYLE IN FOLDING TABLES

MFR'S DESCRIPTION: folding table designed to eliminate "institutional" look associated with folding furniture.
USES: office, etc.
SPECS/FEATURES: mfr stresses durability to withstand hard usage in addition to contemporary, slim leg styling. Other features include: nonvisible leg braces when table is open; tops surfaced and edged with marproof *Formica* plastic laminate in patterns or solid colors. Built-up type tops have ¾" solid plywood core and plastic backing sheet; table's understructure consists of metal skirt running unit's full length and across ends (entire skirt is finished in flat black, baked enamel); legs are 1⅛" square welded steel tubing, finished in satin chrome or flat black, baked enamel; leg ends are fitted with square, black, plastic insert guides; each leg has its own specially designed lock which operates from single lever at table's center pro-

NEEDLESS STEPS ELIMINATED IN MOVING PEDESTRIAN TRAFFIC HORIZONTALLY OR ON AN INCLINE WITH COMPLETE SAFETY . . .

SPEEDWALK® & SPEEDRAMP
PASSENGER CONVEYOR SYSTEMS

Stairways become beauty ways when they're glamourized by the "Magic Carpet" of SPEEDWALK and SPEEDRAMP Passenger Conveyor Systems. Beauty is only part of the story, however, for SPEEDWALK and SPEEDRAMP Systems provide features of versatility, safety, economy and public good will, unmatched by architecturally outdated "moving stair" type conveyances.

S-A

WRITE FOR BULLETIN 457
SPEEDWALK DIVISION
STEPHENS-ADAMSON MFG. CO.
72 RIDGEWAY AVENUE • AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

Circle 126 for further information

BETTER FAST WHITEPRINTER at LOWEST PRICE

Finger tip speed control

FOR INDIVIDUAL OFFICE USE

Finger tip speed control for whiteprints, sepias and foils
Fastest Diazo Lamp on market
Priced below all other makes
Rotolite prices start at $129.50

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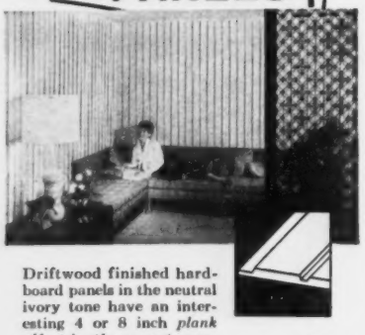
ROTOLITE SALES CORP., Stirling, N. J.
Please send literature on Rotolite "Expeediter"
Name .....
Concern .....
Address ..... City ..... State .....

Circle 127 for further information

CHOICE OF 3 NEW TEXTURES IN Evanite PANELS



Driftwood finished hardboard panels in the neutral ivory tone have an interesting 4 or 8 inch *plank effect* in the smart, new Evanite Panel 4. Easy to apply with shiplap joints and matching color nails.

FABRI-TEX with its burlap-like surface adds intrigue and interest to *exterior* screens or windbreaks . . . or *interior* accent walls. A rugged, tempered hardboard with the vertical Panel 4 texture that is dent-proof.

Recreation rooms, children's rooms or any interior area that is really lived in needs the *scuff-resistant Vee-Plank* surface. A handsome hardboard with v-grooves providing a random plank effect. Factory finished in the exclusive Driftwood tone . . . needs no painting . . . when it's installed, its finished!

WRITE TODAY FOR FREE SAMPLES AND LITERATURE . . .

Evanite BUILDING PRODUCTS

Hardboard Division

EVANS PRODUCTS CO.
CORVALLIS, OREGON

Circle 128 for further information

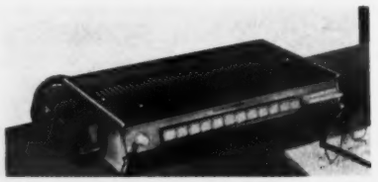
PRODUCTS, EQUIPMENT, MATERIALS

viding rigid, positive locking by means of short throw cam and torsion bar; legs are secured in folded position by special clip.
AIA FILE NO. 28-A-7
MFR. HOWE FOLDING FURNITURE, INC.
Circle 224 for further information

INTERCOM SYSTEMS

AUTOMATIC INTERNAL COMMUNICATIONS SWBD

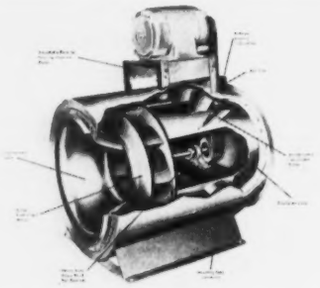
MFR'S DESCRIPTION: an easily expanded automatic internal communications switchboard by use of additional assemblies as needed.
SPECS/FEATURES: called *Telematic*, switchboard system can be expanded on user's premises without use of soldering irons or special skills. By means of plug-in relay sets and plug-in connecting cables, it can be assembled to provide up to 240 stations and 32 links. 20 to 25 per cent increase possible by adding selective ring common talk stations. System comprises a basic 60 line-8 link switchboard and power supply, extension frames, and group selector frames. Cost of unit ranges from $2,500 to $14,000 for 240 station-32 link installation. Self contained unit measures 89" high, 31" wide and 8" deep. Wall mounted power supply is 20" x 13" x 9".
AIA FILE NO. 31-i-52
MFR: DICTOGRAPH PRODUCTS, INC.
Circle 225 for further information



TRANSISTORIZED INTERCOM UNIT

MFR'S DESCRIPTION: *Chief Redi-Power* is compact, all-transistorized intercom unit designed to overcome high noise levels and provide complete intercommunication.
USES: office and industrial applications.
SPECS/FEATURES: proportioned like a book, model is less than 3" high and lies flat on desk. It is self-compensating to deliver up to full 20 watts of power to all or any group of stations, supplying ample volume to each station when called simultaneously, as well as individually. Each station receives pre-determined amount of volume with no division of output as more stations are called at once. Return speech from called stations is received at normal room volume. Finished in brushed chrome and charcoal gray. Standard features include private or non-private operation of masters and staffs at user's choice; incoming call chime; external relay control for use in extremely high noise level areas; busy signals which visually indicate when given station is in use; and monitoring signal. Voice range power is said to reproduce speech with clarity and naturalness of tone.
AIA FILE NO. 31-i-51
MFR: TALK-A-PHONE CO.
Circle 226 for further information

HVAC



STRAIGHT-LINE FLOW CENTRIFUGAL FAN

MFR'S DESCRIPTION: *Centriline* unit combines advantages of airfoil-bladed centrifugal fan performance with space-saving features of straight-line air flow.
USES: commercial and industrial applications.
SPECS/FEATURES: air-conditioning and air handling fan installations can be made less than one-half space previously required with scroll-type units. Fan is rated according to same Air Moving and Conditioning Assn. (AMCA) classifications as conventional centrifugal fans. Available in six sizes with airfoil wheels from 27" to 44½" in diameter, all of unobstructed design with no intermediate rings or stay rods to interfere with quiet streamline air flow. Catalog available.
AIA FILE NO. 30-D-1
MFR: STURTEVANT DIV., WESTINGHOUSE ELECTRIC CORP.
Circle 227 for further information

PATENTED BLADE RETENTION SYSTEM

MFR'S DESCRIPTION: the patented blade retention system available in *Benson Axial Flow Blowers* allows each individual blade to rotate about its own hub axis thereby eliminating the usual bending and fatigue stresses.
USES: mechanical equipment installations.
SPECS/FEATURES: blades are individually mounted on rubber pads which permits ease-of-maintenance. Installed on in-line connections with existing duct work thereby eliminating costly elbows and off sets normally required on centrifugal installations. Often unit is mounted directly on wall or ceiling giving additional floor space.
AIA FILE NO. 30-D-1
MFR: COMMERCIAL BLOWER DIV., BENSON MANUFACTURING CO.
Circle 228 for further information

YEAR-ROUND ELECTRIC FURNACE UNITS

MFR'S DESCRIPTION: an improved line of electric furnaces is available in outputs of 62,000 and 82,000 Btu/hr (at 240 v.). Both units designed for easy adaptation to year-round climate control.
USES: residential installations.
SPECS/FEATURES: air-conditioning may be added to electric furnace units because drain pan and cooling coil are integral parts of unit—eliminating need for conventional separate cooling coil cabinet. 62,000 Btu/hr unit utilizes four 4½ KW heating elements which are energized and de-energized at timed intervals under thermostat command. Modulated heat with accurate temperature control provided. 82,000 Btu/hr furnace has four 6 KW elements. Furnace capacities can be varied in field to suit individual heating requirements. Installation costs of an electric furnace, complete with ductwork for air circulation are about same as electric baseboard system, according to mfr. Furnaces measure 41" long, 28¼" wide, and are 22¾" high.
AIA FILE NO. 30-B-1
MFR: MUELLER CLIMATROL, DIV. OF WORTHINGTON
Circle 229 for further information

AIR FUEL INTERLOCK SWITCH

MFR'S DESCRIPTION: the *Cat. 114P Static Pressure Control* is announced as specifically designed for use as an air-fuel interlock switch.
USES: in packaged steam generators of mechanical equipment systems.
SPECS/FEATURES: for steam generators requiring safeguards to prevent flow of fuel when a hazardous condition is present due to lack of forced draft. Contacts of switch are usually wired in series with solenoid of oil shut-off valve, thereby oil valve will

prevent flow of fuel unless blowers are supplying proper amount of forced draft. *Cat. 114P* approved and listed by UL. Switch adjustable over range of .1" to .5" water column static pressure. Electrical ratings of single pole, double throw switch are 15 amp, 120-125 v., AC, ⅛ hp, or 125 v. amperes pilot duty.

AIA FILE NO. 30-C-3

MFR: THE HENRY G. DIETZ CO., INC.

Circle 230 for further information

THROUGH THE WALL AC UNITS

MFR'S DESCRIPTION: a line of through-the-wall air-conditioning units, called *Air-ditioners* feature forced-air heating with electricity, steam or water from a central source.

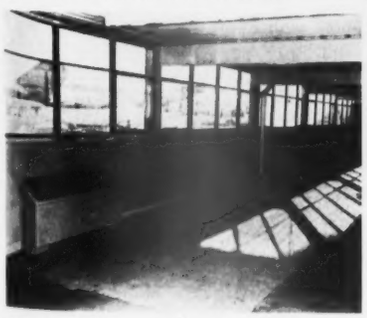
USES: year-round central heating and individual room cooling for apartments, homes, hotels and office buildings.

SPECS/FEATURES: cooling supplied by a self-contained refrigeration unit; unit dehumidifies, recirculates or exhausts room air, and introduces fresh outside air and filters all air. Heating elements available for two-pipe steam or hot water systems, one-pipe steam systems or electric systems. Steam and hot water elements made of copper tubing bonded aluminum fins with ¾" IPS connections and air vent connections where necessary. Electric units rated from 115 to 230 v, 60 cycles, 1 to 1½ hp, with cooling capacity of from 9,000 to 12,000 Btu and heating capacity from 14,900 to 24,400 Btu using steam, hot water or electricity. Units are competitively priced and available from stock.

AIA FILE NO. 30-F-1

MFR: MODINE MANUFACTURING CO.

Circle 231 for further information



STEEL SLIP COVERS FOR AIR-CONDITIONING UNITS

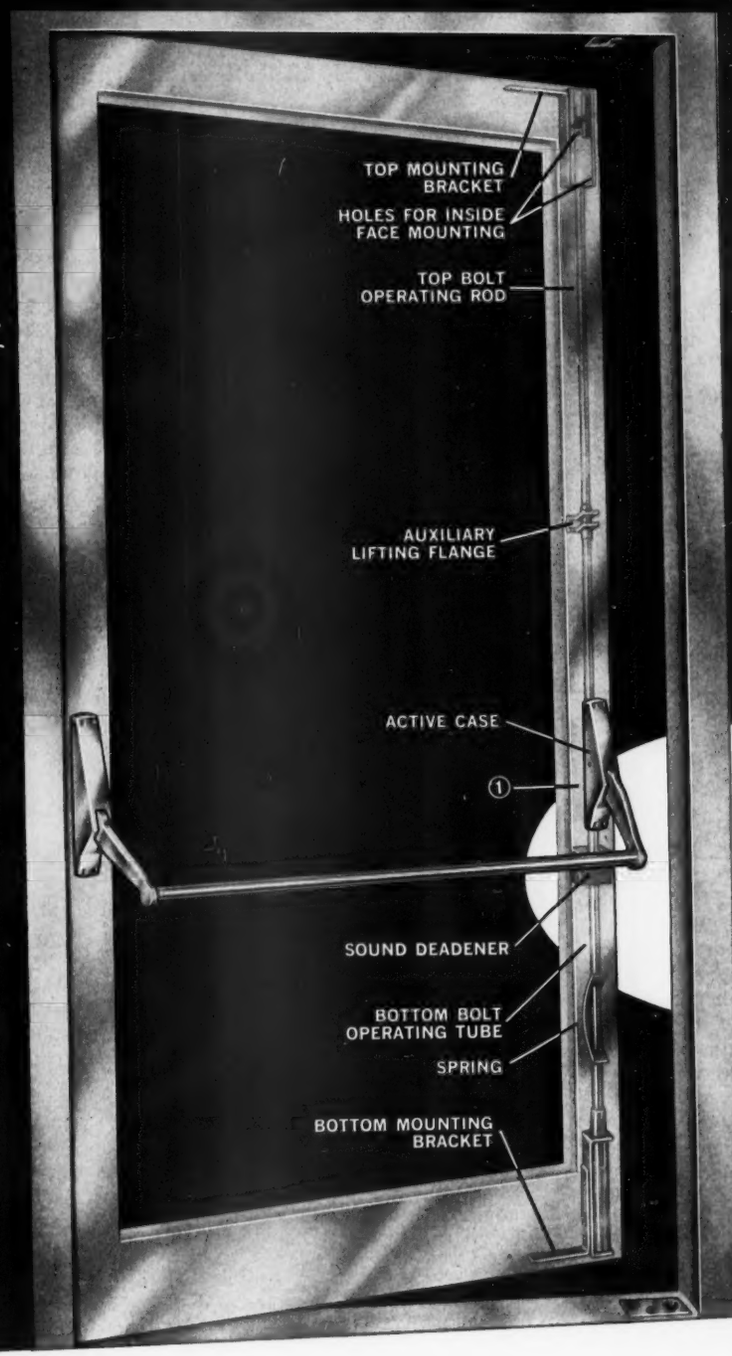
MFR'S DESCRIPTION: custom covers of special corrosion-resistant, paint-holding sheet steel.

USES: protection of air-conditioner units.

SPECS/FEATURES: specially treated electro zinc-coated steel sheet will withstand vibration, banging, condensation, scuffing, and chipping. Coating acts as lubricant in fab-

Circle 129 for further information →

Introducing



Easy action exit

- SECURITY
- SAFETY
- POSITIVE OPERATION

① LIFTING FLANGE (located behind Active Case)

Specify **CORBIN SERIES 1060** for the latest in Concealed Exit Bolt design. Expertly styled to blend with today's narrow (down to 1½") stiles. Corbin engineered to deliver a lifetime of reliable performance and maximum security. ¾" throw Pullman top latch; 13/16" throw **compensating** round bottom bolt. For door sizes up to 3'6" wide by 8'6" high. Easy, low-cost installation in factory or field. Available in standard finishes of brass, bronze or anodized aluminum.

CORBIN

P. & F. CORBIN DIVISION

THE AMERICAN HARDWARE CORPORATION
NEW BRITAIN, CONNECTICUT

NEW CATALOG

ON PYREX® GLASS DRAINLINE

The modern drainline that takes corrosion in stride

HERE'S WHAT IT TELLS YOU. All you need to know about PYREX glass drainline . . . the modern, low-cost drainline that takes corrosion in stride with the understandable exception of massive quantities of hydrofluoric acid or hot alkalies. All you need to know about the special glass we make it from. All you need to know about how high you can stack it, how far you can run it, how deep you can bury it.

It tells you in text, tables and photos how to install it, how to make joints that lock with the turn of a single nut and how to hang it. All you need to know about fittings, sizes. Even prices are included. And there's a typical specification to guide you in including PYREX glass drainline in your next job.

USE THIS COUPON

CORNING GLASS WORKS
4411 Crystal Street, Corning, New York
CORNING MEANS RESEARCH IN GLASS

Please send me a copy of the new 12-page catalog, **PYREX Glass Drainline.**

Name.....

Title.....

Company.....

Address.....

City.....Zone.....State.....

Circle 130 for further information

rication and eliminates galvanized spangle effect on metal's surface to bleed through base paint. Panels, frames and supports for units are made of *Electro Paintlok*. Welded or bolted together, cabinets are coated with rust inhibiting paint for additional surface protection. Doors and removable panels are located on units to permit access to piping, valves, oil points and controls.

AIA FILE NO. 30-C-41

MFR: REPUBLIC STEEL CORP.

Circle 232 for further information

WET TYPE DUST COLLECTOR

MFR'S DESCRIPTION: a wet-type dust collector, with no moving parts and requiring minimum floor space is announced.

USES: cleaning air streams.

SPECS/FEATURES: the *Uni-Wash Dust Collector* is made up of standard elements that can be adapted to most installations. Complete and compact unit, useful to metal grinding and finishing operations. Unit will remove dirt, dust, grindings, chips, fumes, and vapors. No pumps or agitators are used in air-washing process. Removes contaminants from air stream and deposits them as a wet sludge for manual or automatic removal.

AIA FILE NO. 35-J

MFR: THE DEVILBISS CO.

Circle 233 for further information

COMPACT ELECTRIC UNIT HEATER

MFR'S DESCRIPTION: a line of electric unit heaters requiring no special piping, valves, pumps, furnaces or ductwork have been introduced.

USES: domestic and commercial applications.

SPECS/FEATURES: units can be mounted by suspension from a ceiling or by support from a wall or ceiling by means of bracket. Compact units are thermostatically or manually operated. Motors have thermal overload protection and are suspended from the safety fan guard on back of casing. Rubber mounting provided to absorb and dissipate motor and fan vibration. Heating element consists of steel fins bonded to steel tubes with nichrome wires embedded in magnesium-oxide. Horizontal louver blades can be adjusted for direction control of air stream. Rated from 5 to 25 KW, 208 to 480 v, and available from 1/85 to 1/6 hp, new units are competitively priced and available from stock.

AIA FILE NO. 30-C-43

MFR: MODINE MANUFACTURING CO.

Circle 234 for further information

KITCHEN/FOOD SERVICE

SHALLOW BOX ELECTRIC COOKING TOPS

MFR'S DESCRIPTION: four-element electric cooking tops, *series 4M, 4MA, and 4MC,* have been redesigned and stated to offer shallowest rough-in box in industry.

USES: residential kitchens.

SPECS/FEATURES: rough-in box projects only 2 5/16" below counter top. UL approved and is equipped with 36" flexible metal conduit for attachment to locally provided junction box. Various automatic features stressed plus economy and efficiency of installation.

AIA FILE NO. 35-C-11

MFR: THERMADOR ELECTRICAL MFG.

Circle 235 for further information

PORTABLE CENTRALIZED FOOD SYSTEMS FOR HOSPITALS

MFR'S DESCRIPTION: line of hospital food service equipment, *Wheelaway,* involving relatively lightweight but sturdy units, all on wheels, that can be set up overnight, to make efficient tray assembly line in any kitchen area.

USES: hospitals.

SPECS/FEATURES: system can be organized in any way that space available dictates. Hot and cold food can be put on combination *Wheelaway* belt, or can be assembled on two separate lines that meet where portable equipment that goes to patient floors is stationed. Belt tables are equipped with bus ducts on either side so that auxiliary units simply plug into belt assembly table. Single outlet of 100 or 200 amp capacity will supply electricity for all units. Besides portable conveyor belt, system includes tray make-up unit with self-leveling dispensers for trays and glassware (and space to put empty racks), separate hot food units for eggs, meats, vegetables and soups; refrigerated units for puddings and salads, cream, butter, and milk; coffee unit, reject table and portable self-leveling dispensers for plates, egg cups, soup bowls, ice cream dishes, glasses, and plate covers. All equipment is fabricated of stainless steel.

AIA FILE NO. 35-C-13

MFR: S. BLICKMAN, INC.

Circle 236 for further information

BRILLIANT COLORS FOR FOOD SERVICE EQUIPMENT

MFR'S DESCRIPTION: the *"Simplicity"* line of food service equipment, designed specifically for school use, now features a series of brilliant colors.

USES: school buildings and similar institutional uses.

SPECS/FEATURES: mfr stresses comprehensive research to develop colors and design of food service equipment that fulfills requirements of contemporary school lunch service. Colors are bonded to the metal and are stated to be as easy to clean as stainless steel equipment. New equipment includes complete separate mobile serving units—a hot food server, cold food server, milk dispensers, tray assembly stands, etc. Heavy duty use, but ease of handling by women employees, and simplicity of electrical service are among other stated features. Colors now available are flamingo (a pumpkin), turquoise, brilliant yellow, and rosy lavender. Other colors available. Tops of counter units are of stainless steel.

AIA FILE NO. 35-C-13

MFR: S. BLICKMAN, INC.

Circle 237 for further information

WEATHERPROOFING

PROTECTIVE COATING FOR ASPHALT PAVING

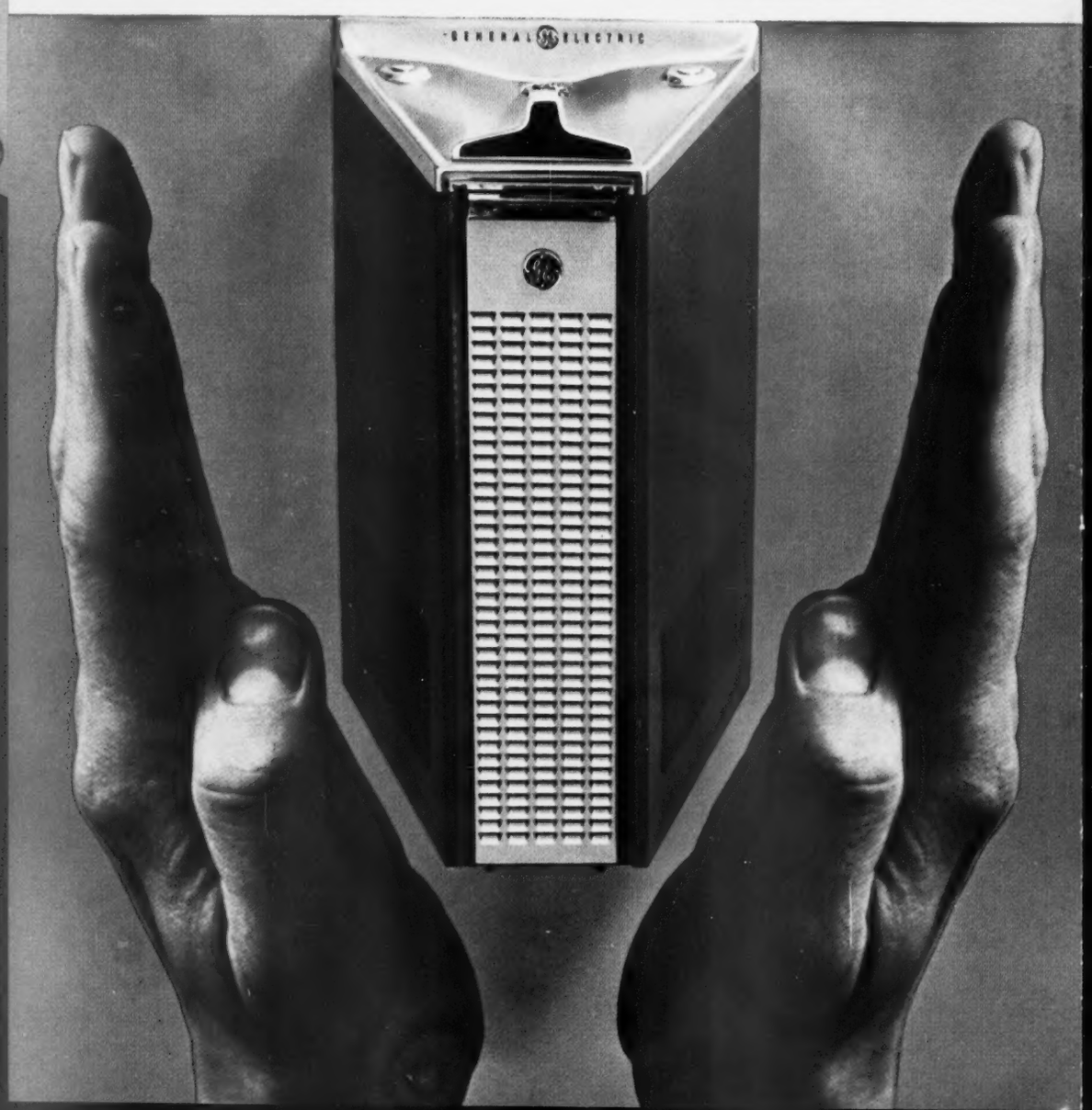
MFR'S DESCRIPTION: *Seal-Coat* is said to form continuous, firmly adherent, protective coating over asphalt and to resist damaging effects of chemicals, weather, and heavy wheel traffic.

Circle 131 for further information about GENERAL ELECTRIC →

WATER COOLERS AIA FILE No. 29D-42

General Electric Announces...

THE NEW SPACE-SAVING SHAPE IN WATER COOLERS



LIFT FOLDOUT—Tear out for filing

WATER COOLERS AIA FILE No. 29D-42

...bright—ca...
...resting ... for installation
where drinkers' heights may vary ...
standards.

—can even be installed
installations such as schools
may vary from normal adult

The NEW Space-Saving Shape in Water Coolers from General Electric

CAN SAVE AN EXTRA FOOT OF AISLE SPACE; INSTALLS FLUSH TO WALL

- **Unique three-way approach helps eliminate aisle "traffic jams", saves aisle space**
- **Wall-mounted and floor models available**
- **All plumbing completely enclosed, hidden from view**
- **Clean, modern, durable**

Take a good look at the latest news in water coolers—General Electric's new space-saving shape, now available in both wall-mounted and floor models.

A unique three-way approach invites access *from either side of the cooler*, as well as the front. Drinkers don't block aisles, providing over an additional foot of aisle space.

NO PLUMBING EXPOSED– All units mount *flush* to the wall, eliminating at least six inches of plumbing space behind the unit. All plumbing is completely enclosed. No unsightly pipes or valves mar the clean modern appearance.

CLEAN, MODERN, DURABLE– New General Electric coolers are designed for the most up-to-date office décor; yet are so durable they'll withstand the rough treatment often encountered on the factory floor or in much-travelled hallways. They're smart, attractive, and clean. The rich grey finish is designed to blend with any surroundings. Stainless steel panels are available as an optional extra.

ASK YOUR GENERAL ELECTRIC DISTRIBUTOR about the many Total Value features of these new coolers. He's listed in the yellow pages under "water coolers". Or write Section 761–07, General Electric Co., Commercial Equipment Department, 14th and Arnold Streets, Chicago Heights, Ill.

Progress Is Our Most Important Product

GENERAL ELECTRIC

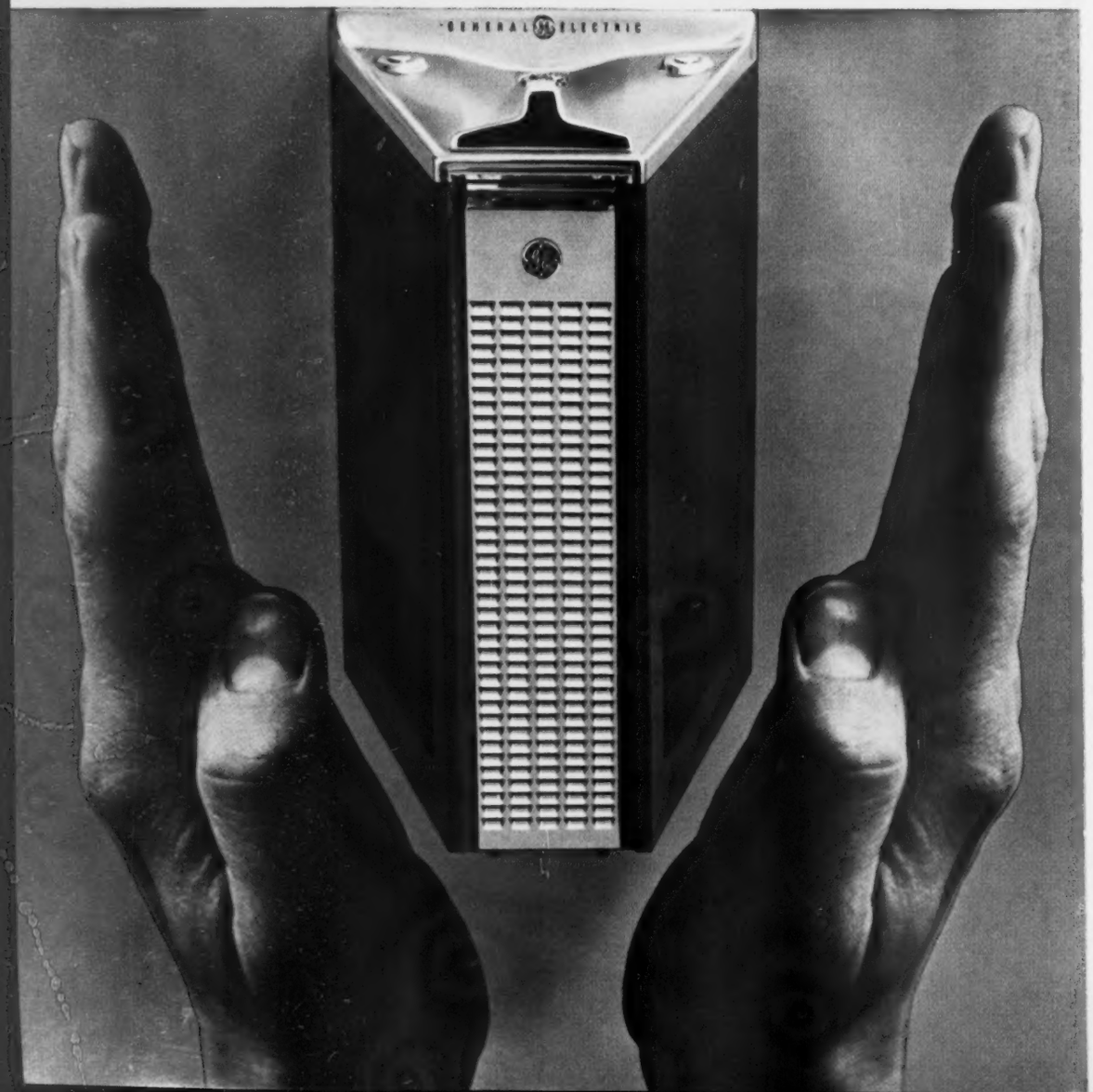
STREAMLINED STYLING of new General Electric water coolers blends with any surroundings. A no-squirt bubbler; anti-splash basin, and feather-touch, finger-tip control add to your comfort, convenience.

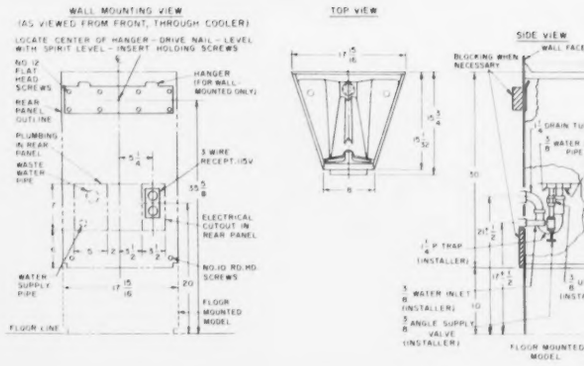
HOT-AND-COLD UNITS are available in the new space-saving design. Also, a hot-water accessory is available for quick, easy addition to installed units. Optional glass and carafe fillers are easy to install.

SIDE ACCESS helps keep drinkers from blocking aisle; prevents traffic congestion around the water cooler, and gives you over an additional foot of aisle space. Floor models feature a full-width foot pedal.

General Electric Announces...

THE NEW SPACE-SAVING SHAPE IN WATER COOLERS





Minimum width of niche when cooler is centered and recessed is 28 inches.
Minimum wall clearance on left side when cooler is off-center in niche is 5 inches

Wall-mounted Coolers	Model No.	Free-Standing (floor) Coolers
Standard Commercial	PW6	Standard Commercial
High-capacity Commercial	PWP11	High-capacity Commercial
Standard Commercial, Hot-and-Cold	PWH6	Standard Commercial, Hot-and-Cold
High-capacity Commercial, Hot-and-Cold	PWPH11	High-capacity Commercial, Hot-and-Cold

Wall-mounted models may be mounted directly on floor for children.

CONDENSED SPECIFICATIONS

General specifications for all models are 1/5 HP sealed compressor unit, 4 watt fan maximum operating limits of 110F ambient temperature and 100F inlet water temperatu

MODEL NO.	PW6	PWP11	PWH6	PWPH11	PF6(1)	PFP11(2)
Mounting	Wall	Wall	Wall	Wall	Floor	Floor
Precooler	No	Yes	No	Yes	No	Yes
Reservoir Net Vol. (Qts) COLD	5.7	5.7	5.7	5.7	5.7	5.7
Reservoir Net Vol. (Qts) HOT	—	—	2.0	2.0	—	—
Approx. Net Weight (Lbs)	100	105	105	110	110	115
Approx. Shipping Weight (Lbs)	105	110	110	115	115	120

(1) Meets mechanical and capacity requirements of Federal specification 00-0566C (1 Size 5.
(2) Meets mechanical and capacity requirements of Federal specification 00-0566C (1 Size 10.

Data and specifications subject to change without notice

NUMBER OF PEOPLE THESE COOLERS WILL SERVE AT RATED[2] CONDITIONS

(According to U.S. Dept. of Commerce Standard CS-127-45)

Application	Drinking water Temp. F	PW6 PF6 PWH6 PFH6	PWP11 PFP11 PWPH11 PFPH11
Office or school			
Bubbler service	50	73	132
Cup service	50	183	183
Industrial			
Light Mfg.	50	43	77
Heavy Mfg.	55	30	55
Hot Heavy Mfg.	60	24	44
Restaurant[1]	45	61	110
Cafeteria[1]	45	73	132
Hospital	50	73	132
Theatre	50	610 Seats	1100 Seats

Notes: 1. Special consideration should be given to peak-load demands for this application.
2. Rated conditions—80F inlet water cooled to 50F in 90F ambient temp.

STANDARD POWER SUPPLY 115 Volts—50/60 cycle AC. For non-standard AC power supply, see your G-E Apparatus representative regarding the following transformers:

TRANSFORMER CATALOG NO.	PRIMARY VOLTAGE RANGE 50 CYCLE	60 CYCLE
9T51Y5403	101–136	112–148
9T51Y5402	189–260	208–283

WC-1004
8-60

ACCESSO

Hot water accesso quick, easy field ins 10HX97.

Carafe filler acce field installation, Cat

Push-back glass available for field i No. 10HX99.

Platform-type gla available for field i No. 10HX100.

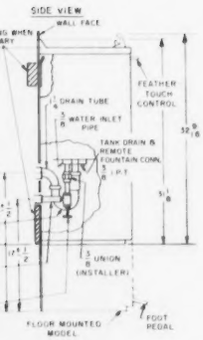
Water line strain tion, Catalog No. A1

Stainless steel fro available at extra order

Liste issue For the y

GENE

Commercial Equip
14th & Arnold Street



d is 28 inches.
niche is 5 inches.

) Coolers	Model No.
l	PF6
ercial	PFP11
,	PFH6
ercial,	PFPH11

or children.

nit, 4 watt fan motor output, and ater temperature.

	PFP11(5)	PFH6	PFPH11
	Floor	Floor	Floor
	Yes	No	Yes
	5.7	5.7	5.7
	—	2.0	2.0
	115	115	120
	120	120	125

on 00-0566C (1-18-45) for Type I,

on 00-0566C (1-18-45) for Type I,

out notice

ACCESSORIES:

t water accessory kit available for , easy field installation, Cat. No. X97.

rafe filler accessory available for installation, Catalog No. 10HX98.

sh-back glass filler accessory able for field installation, Catalog 10HX99.

atform-type glass filler accessory lable for field installation, Catalog 10HX100.

Vater line strainer for field installa- Catalog No. A1522.

ainless steel front and side panels lable at extra cost—specify on er

TYPICAL SPECIFICATIONS

Cooler specified shall be a self-contained electric water cooler with cooling capacity of at least____gph from 80F inlet water to 50F drinking water in room ambient temperature of 90F.

Shall mount flush against the wall with all plumbing concealed; may be mounted on floor or at any wall height to suit application.

Top shall be of 302 stainless steel especially finished to reduce stains, scratches and fingermarks, with removable drain strainer to permit cleaning of drain pipe or precooler without removing top; glass and carafe filler accessories to be installable without disconnecting plumbing.

Front and side panels shall be easily removable, constructed of 19 gauge phosphatized steel painted with separate prime and baked enamel finish.

Refrigeration system shall be hermetically sealed, Freon-12 refrigerant flow controlled by capillary tube.

Anti-squirt, anti-hose bubbler shall have built-in pressure regulator to deliver smooth, even flow at supply pressures of 20 to 100 psi.

Water stream shall be operated by feather-touch, finger-tip control, located on cooler centerline and directed toward rear; approachable and drinkable from front and either side.

Cooling tank shall be anti-freeze, burst-proof, 302 stainless steel with copper refrigerant coil mechanically bonded to exterior. Temperature controlled by adjustable thermostat. Cooler shall have provision for addition of internal hot water system accessory.

Entire cooler shall carry written one year warranty and five year replacement agreement on entire refrigeration system.

Cooler shall meet U.S. Bureau of Standards specification CS127-45 and be listed by Underwriters' Laboratories.

Cooler shall be General Electric Model_____ or equal.

COOLING CAPACITY

(GALLONS PER HOUR COOLED TO 50F)

Room Temp.	Inlet Water Temp.	Model Number: PW6 PF6 PWH6 PFH6	Model Number: PWP11 PFP11 PWPH11 PFPH11
70F	70F	10.3	15.8
	80F	6.9	11.4
	90F	5.1	8.9
	100F	3.7	6.9
80F	70F	10.3	15.6
	80F	6.9	11.9
	90F	5.1	9.4
	100F	3.7	7.9
90F	70F	9.2	14.5
	80F	**6.1**	**11.0**
	90F	5.1	8.9
	100F	4.2	7.7
100F	70F	7.5	12.2
	80F	5.5	9.4
	90F	4.1	7.6
	100F	3.6	6.8

Notes:1. For exclusive cup or remote service, capacity of PWP11, PFP11, PWPH11 and PFPH11, is same as PW6. Capacity of PW6, PF6, PWH6 and PFH6 same for bubbler, cup or remote service.
2. Bold face type indicates standard industry rating (A.S.R.E.).
3. For 50 cycle operation reduce power and capacity rating 15%.
4. Gallons of 50F water cooled per hour. One gallon serves 12 office, 7 light manufacturing, 5 heavy manufacturing workers, or 4 hot heavy manufacturing workers.
5. Ratings other than bold face are based on preliminary engineering studies and are subject to change without notice.

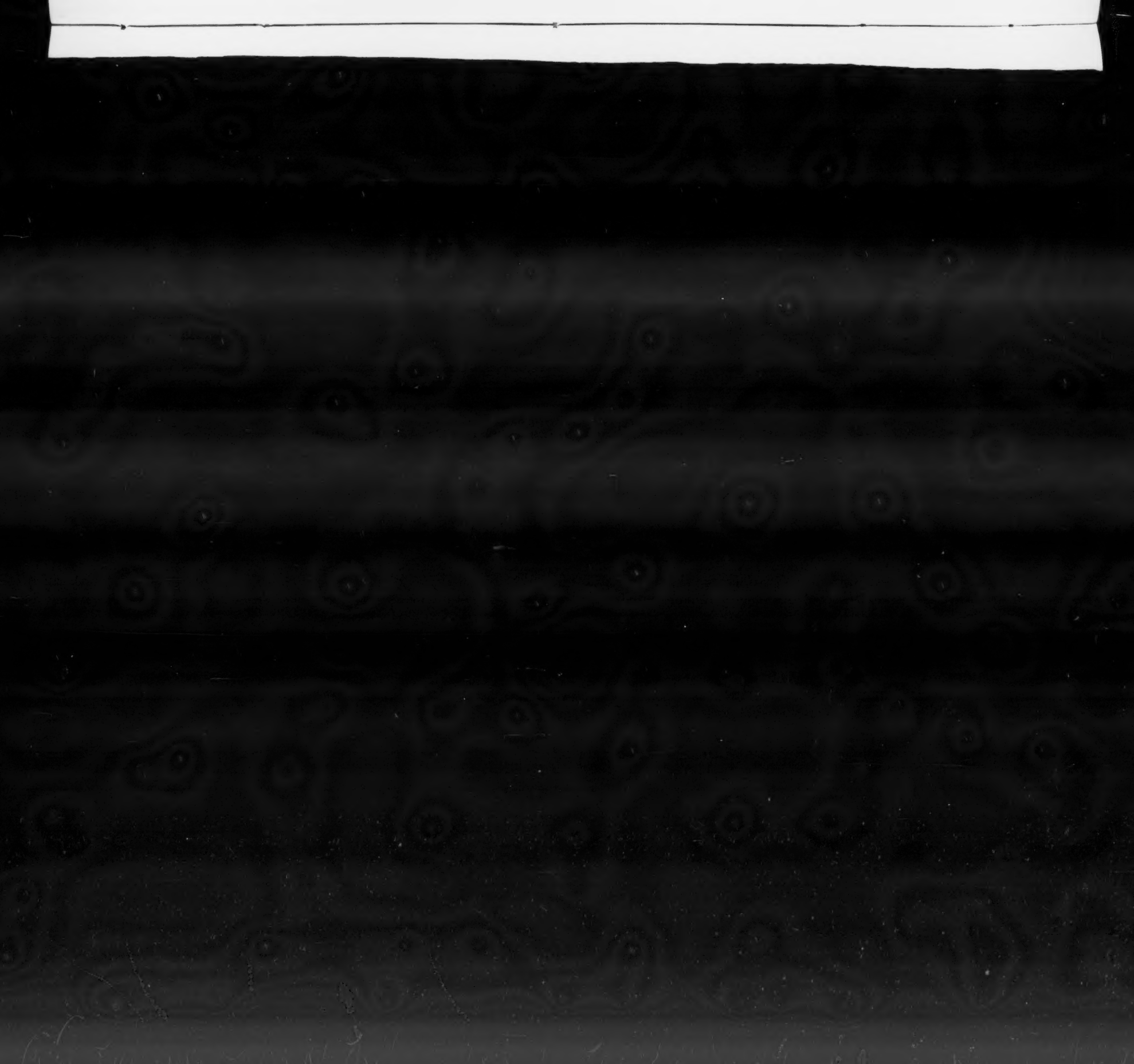
Listed by Underwriters' Laboratories, Inc. Complies with requirements of CS127-45 as issued by the National Bureau of Standards U.S. Department of Commerce.

For more information, contact your nearby General Electric Distributor. He's listed in the yellow pages under "water coolers."

ENERAL ELECTRIC

mercial Equipment Department
& Arnold Streets

Water Cooler Section
Chicago Heights, Illinois



USES: driveways, parking lots, filling stations, shopping centers, etc.
SPECS/FEATURES: coal tar base give *Seal-Coat* high resistance to disintegrating action of oils, greases, gasoline and anti-freeze solutions as well as hot sun and frost. Mfr states that product is easy to apply with push broom or squeegee and that its low cost protection makes it practical for wide application. Meets U.S. Government Specification R.P.—00355.
AIA FILE NO. 25-B-4
MFR: LEWIS ASPHALT ENGINEERING CO.
Circle 238 for further information

COMBINATION ALUMINUM SILL & THRESHOLD

MFR'S DESCRIPTION: the all-in-one extruded aluminum *Sill 'n Threshold* designed for construction cost saving and stated to eliminate need for a "sleeper" in concrete and terrazzo floors.
USES: sill or threshold unit.
SPECS/FEATURES: eliminates need to notch wood floors or chip concrete slabs. Doors may be re-located simply. Maintenance ease stressed since unit is stated to be rust proof, leakproof, termite, weather, and dustproof. Combination products available for complete weathersealing. All units made of extruded aluminum.
AIA FILE NO. 14-B
MFR: COMBO MANUFACTURING CO.
Circle 239 for further information

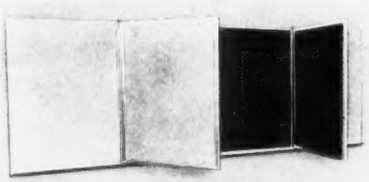
MISCELLANY

FINGER-TIP SPEED CONTROL FOR WHITEPRINTER

MFR'S DESCRIPTION: a finger-tip speed control which eliminates gear changing for the Rotolite *Whiteprinter* is stated to provide the fastest white-printing lamp on the market.
USES: drafting room drawing reproduction.
SPECS/FEATURES: unit makes sepias and foils as well as white prints. Simplicity of operation and construction plus ease of lamp maintenance and change is cited. Mounted on convenient office wall, unit takes in widths of 18", 27", and 42" and any length paper. Five models available starting from $129.50. Dry copies are provided and there are no messy chemicals or trays. Cost of reproduction is cited at one cent for letter size and one-half cent psf.
AIA FILE NO. 35-H-3
MFR: ROTOLITE SALES CORP.
Circle 240 for further information

WINDOW GLASS TINTING METHOD

MFR'S DESCRIPTION: a low-cost method tinting window glass in place is providing dramatic savings in air-conditioning costs by reducing solar intensities and reducing glare and sunfading, according to mfr.
USES: commercial and domestic applications.
SPECS/FEATURES: method said to cost 1/3 as much as factory tinted glass. Nine transparent color tints and three frosted tints available. Plastic coating is applied by a flow technique and operates in manner of optical filter—selecting and cutting out various intensities of light that produce heat (infra-red), glare (blue, violet) and fade (ultra-violet). Efficiency test data and comprehensive specification of method available
AIA FILE NO. 26-A-7
MFR: ACORN GLASS TINT
Circle 241 for further information



CHALKBOARD/TACKBOARD CONVERTIBLE PANELS

MFR'S DESCRIPTION: this unit, called *Multi-View*, is a wall mounted panel with sections that pivot to form a chalkboard, a tackboard or a combination surface.
USES: schools, lecture halls, conference rooms or showrooms.
SPECS/FEATURES: single compact unit may serve multiple purposes. An optional white porcelain-enameled steel section serves as projection screen. Chalkboard and tackboard facing materials may be selected from mfr's line. Individual panels available from wide selection of matching or contrasting colors. All sections are 4' high, and vary in widths for over-all dimensions of 12', 16' or 24'. Frame, trim, and chalk tray are precision fitted, anodized extruded aluminum. Details available.
AIA FILE NO. 35-B-1
MFR: SOL-NEL PRODUCTS CO.
Circle 242 for further information

TEMPORARY, REMOVABLE SUPPORT POST DEVICE

MFR'S DESCRIPTION: *Timber-Topper* is device that incorporates ordinary 2 x 3 stud to make temporary, removable support post that will hold up almost anything mfr claims.
USES: hanging spotlights and reflectors; for staging, props and displays; for room partitions and dividers; etc.
SPECS/FEATURES: device consists of metal sleeve measuring 12" x 2" x 3" which has coil spring inside it. To erect post, slide *Timber-Topper* over end of 2 x 3 which has been cut to correct floor to ceiling measure, and spring post into place. Depressed spring holds post firmly upright. Removal is stated to be equally fast and easy. Weighing one pound, device lists at $3.95 each.
AIA FILE NO. 35-N-9
MFR.: REPRODUCTION ENGINEERING CORP.
Circle 243 for further information

ACID AND ALKALI RESISTANT GROUT

MFR'S DESCRIPTION: an acid and alkali resistant grout called *Epox-E-Set* is announced.
USES: for quarry and ceramic tile installations in food processing plants, dairies, breweries and other places where acid and alkali conditions prevail.
SPECS/FEATURES: new type setting bed and grout is a two component material that is quickly and easily mixed on the job. Stated to cost less than furfuryl resin type grouts, it can be mixed in larger batches. Tiles do not have to be waxed before seting because no priming of surfaces

ELECTRONIC • PRINTED CIRCUIT • GRAPHIC

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City State

Circle 132 for further information

←Circle 131 for further information about GENERAL ELECTRIC

is needed. Cleaning can be with plain water without affecting the bond. Strength is at 1,000 psi. Application can be over wet or dry tile or concrete.

AIA FILE NO. 3-L-7

MFR: THE CAMBRIDGE TILE MFG. CO.

Circle 244 for further information

MATERIAL HANDLING CABLE LIFT

MFR'S DESCRIPTION: *Cabl-Lift* is described as "handiest, most versatile lift for handling, lifting, loading, or leveling."

USES: industrial applications.

SPECS/FEATURES: lift requires no foundation and plates are provided on corner posts for bolting to floor if permanent location is desired. Portable units are provided with floor frame and swivel casters. Capacities up to 6,000 pounds with platform size of 6′ x 8′ 6-⅞″. Three standard models available. Standard motor is 1 hp, high starting torque, totally enclosed dirtproof and weatherproof. Can be plugged into electrical outlet. Special voltages available.

AIA FILE NO. 35-i-141

MFR: THE WAYNE PUMP CO., DIV., SYMINGTON WAYNE CORP.

Circle 245 for further information

SELF-CLOSING FLUSH VALVE

MFR'S DESCRIPTION: *Easy-Push* urinal flush valve offers water saving and maintenance-free operation mfr states.

USES: stall urinals.

SPECS/FEATURES: to operate valve requires only fingertip pressure applied to pushbutton handle. Once handle is depressed, it returns slowly to off position and closes automatically. Travel of pushbutton governs amount of water discharge. Water volume is adjustable, and special key and wrench are furnished for this purpose. Other features include a self-cleaning bypass and non-hammering, non-dripping design. All working parts are renewable.

AIA FILE NO. 29-H-21

MFR: SPEAKMAN CO.

Circle 246 for further information

EXPANSION OF STRUCTURAL BOLT LINE

MFR'S DESCRIPTION: the introduction of the ⅞″ and 1″ diameter *Huckbolt* fasteners expands line of medium carbon steel and aluminum alloy fas-

Circle 133 for further information →

Day-Brite lighting helps make the new Pius XII Memorial Library a center of attraction on the St. Louis U. campus.

Day-Brite Troffers with Cleartex® Plastic Lens Panels deliver 73 footcandles of illumination to reading areas.

Architect and Engineer: Leo A. Daly • Electrical Contractor: Sachs Electric Corp.

How Day-Brite lighting "sells" reading in the new Pius XII Memorial Library

From the architect's first draft to the final choice of curtains, St. Louis University's modern new library was planned with one goal in mind: to encourage students to *use* it.

Self-service, open-type book shelves were used to invite "browsing" among the stacks. "Wide-open" interior design helped create a pleasant atmosphere. In addition, comfortable bright-colored furniture was contrasted against light-colored walls and a noiseless cork floor.

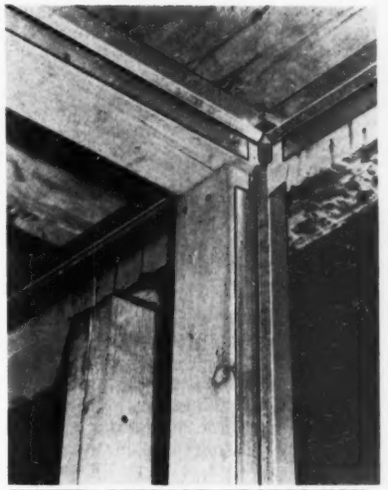
Lighting, of course, was a major consideration. It had to facilitate reading and, at the same time, add to the over-all cheerfulness. Day-Brite lighting was specified for high-level, high-quality illumination and clean, modern fixture design.

Good vision calls for good lighting. And you display good vision when you call in your Day-Brite representative early. *Day-Brite Lighting, Inc., 6260 N. Broadway, St. Louis, Mo., and Santa Clara, Calif. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ont.*

DAY-BRITE

NATION'S LARGEST MANUFACTURER OF
COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT

teners to cover a range of 5/32" through 1" diameter.
USES: requirements for threaded fasteners currently used in bridge and building construction.
SPECS/FEATURES: the *Huckbolt* fastener is neither a rivet nor a bolt but combines the most desirable features of each according to mfr. It is a two-piece design, consisting of a pin and a collar. It features high-pull together with uniform high tensile preload, positive swaged mechanical lock and high shear and tension strength in all materials and diameters.
AIA FILE NO. 17-F
MFR: HUCK MANUFACTURING CO.
Circle 247 for further information



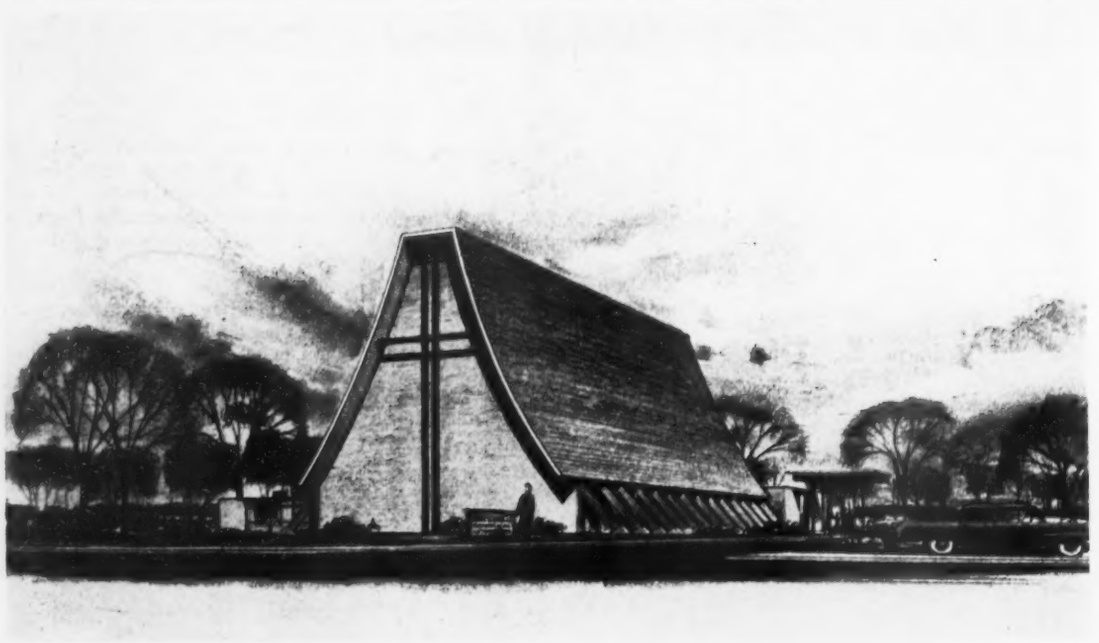
WATER SEEPAGE PROTECTION FOR DOOR TOPS

MFR'S DESCRIPTION: protection against water seepage for door tops is stated to be provided by two extruded aluminum products.
USES: out-opening doors in curtain wall construction and metal doors with transoms.
SPECS/FEATURES: *Series #87 Interlocking Water Shed* consists of two extruded members. Upper member, attached to exterior frame of door surface, designed to deflect surface water more than ¾" and an angle hook interlocks with lower member which is affixed to door top. Other unit *#142 Extended Rain Drip*, is single extruded member which channels draining surface water 2½" away from door.
AIA FILE NO. 35-P-6
MFR: ZERO WEATHER STRIPPING CO., INC.
Circle 248 for further information

←Circle 133 for further information

THE ANATOMY OF A NEW PROJECT **PREVIEW:23**

BETHEL EVANGELICAL LUTHERAN CHURCH, EVERGREEN PARK, ILL. — *project/client*
COOLEY AND BORRE, AIA, AND ASSOCIATES — *architects/engineers*
CHARLES McDONALD — *mechanical engineer*



General background

The congregation of Bethel Evangelical Lutheran Church has never worshipped in a church building in 22 years. In 1938, when the group was formed by the Missouri Synod, English District, with ten members, they assembled in a store. Later, the congregation built a parish house which became their place of worship; a school gymnasium, and a 100-car parking lot were added.

After more than two decades, the members, today comprising 400 worshippers, with 90 children enrolled in day school and 275 pupils in Sunday school, recognized that a problem existed. The present facilities were inadequate. Besides a church, offices, social rooms, and a Sunday school were needed.

Therefore, the architects were commissioned to design a contemporary structure that would be considered nonsecular and yet unique in church architecture. The new structure, when completed, will provide the community of Evergreen Park with a distinctive landmark as a focus for its future growth.

Plan elements

The one-level building consists of a sanctuary, chapel, chancel, outer narthex, classrooms, including nursery, kindergarten, area for retarded children, and offices.

General description

The air-conditioned structure is "L" shaped with the chapel serving as a link between the sanctuary and educational wing. This wing was designed for expansion Over-all dimensions of the structure are 112'—9¼" x 174'—3".

The structure of the roof consists of unusual curved beams 8 feet on center and planked deck construction, giving the nave a tent-like appearance. Designing the exterior and interior to portray this "Tent of the Lord," the architect created an atmosphere of serenity and meditation with all intrusions eliminated.

In the church proper, the sanctuary seats 351 worshippers, plus 230 overflow, making a total of 581. The chapel is used as combination overflow and contemplation area. Outside on the chancel end a huge steel cross covered with lead-covered copper is mounted on the eave overhang.

All exterior walls are face brick. The nave has laminated curved arches supported by reinforced concrete buttresses and 2" wood deck above the arches. Multicolored 1" slab glass windows are encased in the masonry side walls of the nave directly under the curved arches. Tie bars in floor pick up the thrust caused by the arches. The narthex and classrooms have a concrete block interior. Aluminum windows and a roof of laminated beams with wood deck appear on the education wing. The school has straight-forward columns and beam construction with infill of brick. The chapel has face brick interior and slab-glass slit windows.

Interior features and finishes

The roof arcs 44 feet to a continuous skylight under which runs a horizontal stained glass window. Colors range from dark blues and purples at rear of the nave to clear golds and whites at chancel. Fluorescent lights above the stained glass are utilized at night.

The chancel is backed by a curved white oak reredos. Acting as a focal point of the chancel's composition, a polished marble altar receives special attention from the architect. Surrounded by a circular wood communion rail surmounted on bronze supports 2 feet on center, it serves as a symbol of the "Holy Hill of Stone."

The letters *Alpha* and *Omega* are incised on four sides of the altar top with five crosses etched on the marble top. A rough-textured wooden cross with a bronze strip running down its center hangs above the altar. Three steps symbolizing the Trinity and a foot pace lead to the altar.

In the adjoining baptismal chapel, a bluestone altar of rubble pattern rests in a pool of water. A continuous flow of water gushes down the altar face toward the mosaic tile base below water line. Five crosses appear on the bronze hammered top, and two fish and a seashell are etched on its side. A crucifix on the wall hangs directly below the plastic skydome. The font is a richly turned walnut bowl cradled by eight tapered bronze legs forming web-like supports. The chapel will remain open 24 hours a day.

Structural data

The entire structure has poured concrete footings. Foundation walls are of reinforced concrete. The education wing and chapel have a built up tar and gravel roof. The classrooms are post and beam construction using laminated beams and structural wood deck with a built-in ridge on beams for roof dainage. The nave roof is asphalt shingle.

Heating design/HVAC

The heating system is zoned for the classrooms, administrative and pastor's office, nave, and chapel. A two pipe reverse-return hot water system with fin-tube radiation is used in the classrooms and nave. Radiant hot water heating system is found in the chapel. An oil-fired hot water boiler is the heat source (SBI rating is 594,000 Btu/hr.) Toilets are mechanically exhausted. The air-conditioning is a forced hot and chilled water system run in a pipe trench with insulated piping and thermostatic control. Twelve fan coil units in the nave are semi-recessed, wall mounted, each with 27,300 Btu/hr cooling capacity and 52,300 Btu/hr heating capacity with provision to take in outside air.

There is a cooling tower at rear of building. The control system is pneumatic temperature control with five zones. Offices and meeting room have individual window-mounted ac units.

Electrical design

General service: provided by an underground secondary 4-500 MCM RH —RW 3½" conduit encased in concrete. A 400 ampere main distribution system feeds four panel boards. A separate emergency panel controls all emergency and exit lighting.

Interior lighting, illumination levels and controls: in the nave are 12 modified surface mounted square drum fixtures. The up and down lighting is separately switched and connected to dimmer controls for special illumination effects in the chapel and nave.

The chancel is lit by 18-150-watt projector type flood lamps. The narthex, administrative and pastor's office, and the washrooms are lighted by incandescent fixtures, while fluorescent units are provided in the classrooms.

Communications systems: a light signal system operates from the chancel to the rear of the nave. Provisions have been made for public and private telephones and a public address system, including six speakers in the nave, two in the narthex, and one in the kindergarten.

Plumbing design

Plumbing fixtures: two washrooms and kitchenette. Toilet room capacities: men: 2 wc's, 2 urinals, 1 lavatory; and women: 3 wc's, 2 lavatories. Slop sink in boiler room, drinking fountain in corridor. Sinks are also in kitchenette and working sacristy.

Costs

Construction cost $201,774
Cost per square foot $19.20
Cost per cubic foot $1.12
Total square feet 10,264
Total cubic feet 177,698

LITERATURE

Literature cited in this department is available from various manufacturers and associations free of charge, except where indicated. To obtain copies, circle the keyed numbers on the reader service cards facing pages 1 and 58.

WOOD INFORMATION

Four folders, *Why Wood Is Best For: Flooring, Siding, Paneling, and Framing and Sheathing* are the first in a complete series of informational pamphlets to be developed by the lumber group, and written and illustrated to cover such problems as the best flooring for a home, the advantages, properties, and appearance factors in choosing a siding material, where paneling should be used in homes, and why wood is the best material for house framing and sheathing. Other folders in the series will cover such subjects as doors, windows, furniture, cabinetry, and built-ins.

AIA FILE NO. 19-A

ASSN: NATIONAL LUMBER MANUFACTURERS ASSN.

Circle 300 for further information

SCHOOL CONSTRUCTION

Ideas to make more efficient use of school construction dollars are contained in current brochure. Seven school construction jobs, covering all geographical areas of the U.S., are reviewed in the publication with precise descriptions of how these new ideas were tested and proved by school officials, builders and architects. In addition to these major construction stories, low cost teaching aids are pictured. These range from a simple sectional table to movable partitions which help get more use out of available space. Other matters discussed include fire safety requirements, use of fir plywood for economical construction, contemporary design possibilities and benefits, and provisions for future growth of the new schools. (20 pp.)

AIA BUILDING TYPE NO. 34

ASSN: DOUGLAS FIR PLYWOOD ASSN.

Circle 301 for further information

HARDBOARD CATALOG

A Catalog and Guide for Builders and Architects provides specific product data and detailed working and application instructions for mfr's hardboards. It presents specifications and color photos of entire line of exterior and interior hardboard types for construction uses and illustrates many decorating and building ideas. (16 pp.)

AIA FILE NOS. 23-L, 19-D-2

MFR: SILVATEK DIV., WEYERHAEUSER CO.

Circle 302 for further information

RESEARCH HOUSE

Tomorrow's Home Today, complete case history of research house built to explore uses of fir plywood components in home building, has just been completed. Booklet tells story of research and development house built in Champaign, Ill., by DFPA, Plywood Fabricator Service, Inc., and Lumber Dealers Research Council. Included are details of planning, design and engineering of six varieties of components used in house, and conclusions that may be drawn from this structural advance. Detailed descriptions and photographs of all components, their erection and fabrication also are included. (16 pp.)

AIA FILE NO. 19-A

ASSN: DOUGLAS FIR PLYWOOD ASSN.

Circle 303 for further information

DESIGN/PLANNING

CUSTOM-PRODUCED GLASS

Brochure describes engineering and manufacturing service—step by step—from application analysis and formula development through mold design and custom-production. Includes full color photos of products used in street and highway traffic control; aviation, railroad and marine signaling; street and interior lighting; dental and surgical lighting equipment; as well as industrial globes, indicator lenses and color filters. Special sections deal with developing glass compositions for individual applications; controlling and combining properties of glass; engineering products with specific characteristics such as accurate and uniform colors, right distribution of light, high physical strength and thermal shock resistance; custom-production techniques; finishing operations that meet specialized needs; and testing and inspection. Bulletin 760, *This is Kopp Glass.* (20 pp.)

AIA FILE NO. 26-A

MFR: KOPP GLASS, INC.

Circle 304 for further information

SAFETY ZONE DESIGN

Protection against such natural disasters as tornadoes, hurricanes, and earthquakes can be built into a safety zone of a new home according to *Safety Zone Within Your Home,* recently published pamphlet. Construction details are shown for a reinforced brick masonry safety zone which would serve as a regular room during normal times and a place of refuge during a disaster emergency. Details have been approved by the Office of Civil and Defense Mobilization. This design concept also affords good protection against loss of life in 90 per cent of blast damage area of any size atomic or hydrogen weapon, according to

LITERATURE

SCPI. Three maps prepared from authoritative official weather sources show regions of US most susceptible to natural disaster.
AIA FILE NO. 5-K
ASSN: STRUCTURAL CLAY PRODUCTS INSTITUTE
Circle 305 for further information

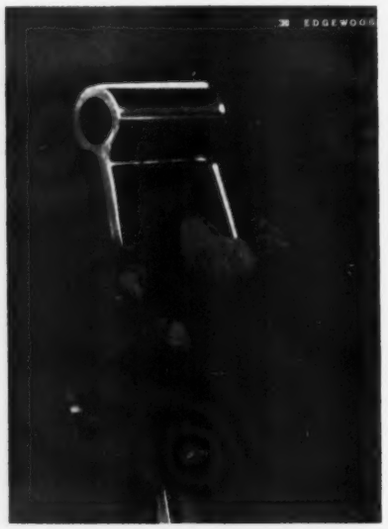
SCHOOL PLANNING
Technical bulletin, *Architectural Design Considerations For Language Laboratories* now available. Noncommercial publication spells out many of the factors which must be considered to achieve a laboratory capable of optimum educational effectiveness. Lighting, ventilation, acoustical treatment, and power requirements are among subjects covered.
AIA BUILDING TYPE NOS. 9, 34
MFR: DUKANE CORP.
Circle 306 for further information

ACOUSTICAL DESIGN
Tone, (vol. 8 no. 3,) a journal of interior design in the acoustical field, now available. Buildings discussed include; John Hancock Building, San Francisco, SOM, architects; County War Memorial, Milwaukee, Eero Saarinen, architect; Longway Planetarium, Flint, Mich., Smith, Hinchman & Grylls, architects; Warson Woods Elementary School, St. Louis, Hellmuth, Obata & Kassabaum, architects; Margo's Dress Shop, Roper & Vance architects. (12 pp)
AIA FILE NO. 39
MFR: ARMSTRONG CORK CO.
Circle 307 for further information

LABORATORY SERVICES
Brochure available detailing laboratory services offered to industry in Applied Research & Development, Testing & Inspection, Product Evaluation & Improvement. They are equipped to perform more than 530 services from abrasion testing to X-ray field laboratory inspection.
ASSN: CENTRAL DIV., AMERICAN COUNCIL OF INDEPENDENT LABORATORIES
Circle 308 for further information

FURNITURE

CHURCH FURNITURE
Portfolio-style catalog describing complete line of distinctive church furniture and accessories now available. Special feature of portfolio is use of "squared" pocket for easy filing of bulletins describing each product in line. Bulletins currently available cover: upholstered pews; plastic-laminated and hardwood-veneer pews; *Interlok* hardwood construction pews; pew ends; and pew, altar rail, and individual kneelers. Each item is fully illustrated indicating various sizes and styles. Cutaway drawings are used to show special features of construction and assembly.
AIA FILE NO. 35-A-4
MFR: FURNITURE DIV., VICTOR INDUSTRIES OF CALIFORNIA
Circle 309 for further information



CONTEMPORARY FURNITURE
Designed by architect William Armbruster, line of contemporary furniture has been evolved for use in public areas, executive offices, institutional and commercial installations. Catalog and illustrated price list covers such items as lounge chairs, settees and sofas; benches; planters; small tables; multiple seating systems; desks and cabinets; chairs; conference tables. (52 pp.)
AIA FILE NO. 28-A
MFR: EDGEWOOD FURNITURE CO., INC.
Circle 310 for further information

PARTITIONS

OFFICE PARTITIONS
Brochure shows application of vinyl-metal laminates as office partitioning and wall panels. Brochure points out advantages of *Arvinyl* panels over other materials and gives specifications and other information about partitioning. (2 pp.)
AIA FILE NO. 35-H-6
MFR: ARVIN INDUSTRIES, INC.
Circle 311 for further information

BUILDING PRODUCTS REGISTER
Section of current Building Products Register, published by the AIA, is available. The Register, now in its first edition, is a compendium of all the products required for building construction, listed in tables summarizing outstanding specification features, and trade names of each product. Such data as materials, thicknesses, finishes, and dimensions are included. Section lists metal toilet partitions manufactured by all competitive producers.
AIA FILE NO. 35-H-6
MFR: FLUSH-METAL PARTITION CORP.
Circle 312 for further information

INSULATION

MINERAL WOOL INSULATION
How to Install Mineral Wool Insulation in Homes is title of publication prepared as guide to approved application practices. Booklet gives detailed and completely illustrated instructions for installing batts and blankets and blowing wool. Booklet explains new "R" (installed resistance) standard that tells user exactly how any mineral wood product —batt, blanket, or blowing wool— will perform after it is installed. Another section details industry's recommendation of the ventilation required for best insulation performance.
AIA FILE NO. 37-C-1
ASSN: NATIONAL MINERAL WOOL ASSN.
Circle 313 for further information

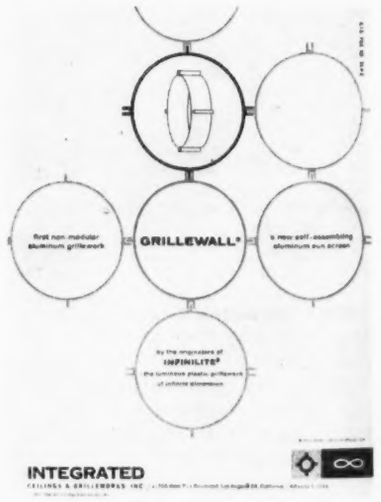
PIPE AND BLOCK INSULATION
Current brochure lists pertinent data concerning this industrial insulation product for temperatures up to 1,350° F. Multifold brochure on calcium silicate pipe and block insulation for use in power, chemical, petroleum, petrochemical and manufacturing industries lists heat transmission data, physical and thermal characteristics, standard sizes and recommended thicknesses. Product description includes factors concerning insulation efficiency, ease of handling, high impact strength, flame resistance, dimensional stability and resiliency. (6 pp.)
AIA FILE NO. 37-D-2
MFR: PHILIP CAREY MANUFACTURING CO.
Circle 314 for further information

METALS

COLOR-COATED STEEL
Illustrated brochure gives general information, characteristics, physical and mechanical properties, and applications for color-coated stainless steel sheet and strip. Also separate color card showing complete color range. (8 pp.)
AIA FILE NO. 15-H-1
MFR: WASHINGTON STEEL CORP.
Circle 315 for further information

Study in Steel

STEEL DESIGN
Study in Steel is brochure describing design concepts developed by Peter Muller-Monk and Associates "aimed at making steel the top design material for everything from toys and furniture to water towers and stadiums." Included are photos of modular design steel office furniture, sketches of designer ideas for other applications, discussion of aesthetics of steel, and mechanics of steel. (28 pp.)
AIA FILE NO. 15-H
MFR: UNITED STATES STEEL CORP.
Circle 316 for further information



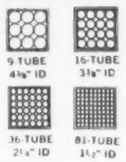
ALUMINUM GRILLEWORK
Grillewall, non-modular, self-assembling, aluminum sun screen described in current brochure which opens with history of grillework as a means of light and temperature control and as ornamentation on structures nearly 5,000 years old. It then shows how these same uses are capitalized upon in the architectural design of the twentieth century. Special emphasis is given to dovetail joint which per-

STACOR Lifetime Steel

Staktube Roll File

low-cost–
space-saving
file & find system

Rolled drawings, maps, plans, blueprints, etc., stay cleaner, safer, easier to find in the new space-saving Staktube Roll File System. All steel-encased 15 5/16" Square File complete with steel-rimmed tubes; **32 sizes—4 ID's, 8 lengths: 18", 24", 30", 36", 42", 48", 54", 60".** Files bolt together for stacking to any height. With locks if desired.



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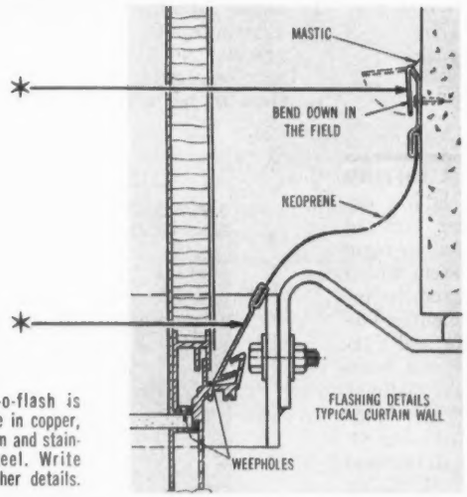
Warehouse Stocks in: Boston, Chicago, Detroit, Hartford, Indianapolis, Los Angeles, Montreal, Philadelphia, Rochester, Saint John, N. B., San Francisco, Toronto, Washington, D. C.

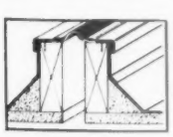
Circle 134 for further information

Expand-o-flash

IN CURTAIN WALL CONSTRUCTION

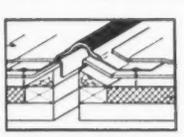


Expand-o-flash is available in copper, aluminum and stainless steel. Write for further details.



Curb roof expansion joint.

Low profile expansion joint.



LAMONT & RILEY CO.

300 SOUTHWEST CUTOFF, WORCESTER 7, MASS.

Circle 135 for further information

LITERATURE

mits circular rings to be joined together without mortar. (8 pp.)

AIA FILE NO. 35-P-2

MFR: INTEGRATED CEILINGS & GRILLE-WORKS, INC.

Circle 317 for further information

HVAC

AIR DIFFUSERS

Bulletin *K-27A* illustrates and describes the *Kno-Draft* linear and rectangular series air diffusers. Offered in three different series—square, panel, long-slotted—the units combine the best air distribution with modern styling, mfr states. Bulletin gives dimensional drawings of several diffuser types in each separate series. Complete selection and performance data is given. (12 pp.)

AIA FILE NO. 30-D

MFR: CONNOR ENGINEERING CORP.

Circle 318 for further information

RADIANT HEATERS

Chromalox Far-Infrared electric radiant comfort heaters are subject of current bulletin *F70100-2*. Pages are devoted to illustrations, application information, features and specification data. Copy points up advantages of localized electric radiant heating for maximum individual comfort in commercial and industrial establishments. Also covered are line voltage thermostat controls and input controllers for use in connection with radiant heaters. (4 pp.)

AIA FILE NO. 30-C-44

MFR: EDWIN L. WIEGAND CO.

Circle 319 for further information

OIL FIRED HEATERS

Bulletin *HE-7* describes entire line of oil fired heaters and gas fired salamanders. Heaters are portable and used wherever temporary heat is required.

AIA FILE NO. 30-B-4..

MFR: AEROIL PRODUCTS CO., INC.

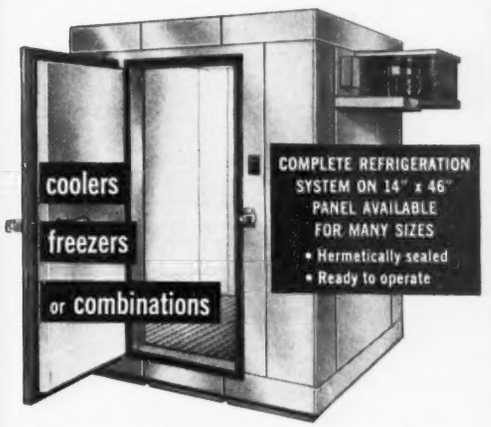
Circle 320 for further information

COMPUTOR/SELECTOR

A Capacity Computer and *Relief Valve Selector* for refrigerant vessels is being distributed. Computer quickly and accurately determines required ASA B9.1 code capacity, number and pressure setting of relief valves for refrigerant pressure vessels from the vessel's dimensions, design working pressure and type of refrigerant used. The Selector on the reverse side of slide chart determines correct size relief valve and size and maximum length of discharge piping in accordance with

Bally **walk-ins**

Aluminum or steel sectional construction



Sanitary! Strong! Efficient! You can assemble any size cooler, freezer or combination in any shape from standard sections. Add sections to increase size as your requirements grow. Easy to disassemble for relocation.

ARCHITECTS: see 8 pages of engineering data in Sect. 26/A of Sweet's Catalog.

Bally Case and Cooler, Inc., Bally, Pa.

Get details—write Dept. AN-11 for FREE book.

Circle 136 for further information

yours FREE... the NEW

1960 RLM specifications book for

industrial lighting equipment brings you

New and Upward Revised Standards

BUT...

REMEMBER THIS IMPORTANT FACT!

This new edition announcement again emphasizes the fact that RLM Specifications are not fixed standards! They are Quality Standards that grow with the Industry and the Science of Illumination. For your new, complimentary copy of the 1960 RLM Specifications Book, write RLM STANDARDS INSTITUTE, 326 W. Madison St., Suite 837N, Chicago 6, Illinois.

RLM

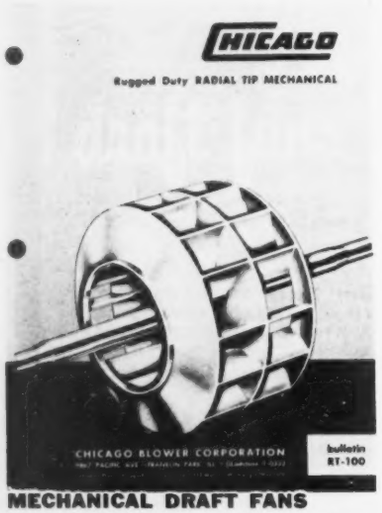
THE FINAL INGREDIENT OF BEING SURE

864

Circle 137 for further information

LITERATURE

code requirements. Relief valve capacities are all ASME National Board Certified, and pressure settings range from 150 psi to 450 psi, including ten popular settings.
AIA FILE NO. 30-F-23
MFR: HENRY VALVE CO.
Circle 321 for further information



MECHANICAL DRAFT FANS

Information on line of high volume radial tip mechanical draft fans now available. Fans are designed for induced draft service in large industrial plants, central power stations, paper mills, sintering plants, etc. Bulletin *RT-100* spells out all pertinent design features of fans, charts mechanical efficiency, provides a table listing sizes from 20" diameter to 80¾" diameter fans, and lists optional and auxiliary equipment available. (6 pp.)
AIA FILE NO. 30-D-1
MFR: CHICAGO BLOWER CORP.
Circle 322 for further information

WEATHERPROOFING

MASONRY COATING

Availability of illustrated brochure on *Hydrocide Colorcoat*, masonry coating, has been announced. Product is heavy bodied, water repellent coating which imparts a beautiful textured finish, mfr states. Used for above grade exterior and interior masonry surfaces, it is both protective and decorative, and combines durability with all-weather resistance. Brochure describes special properties and gives complete instructions for its application on all types of above grade masonry surfaces. Full color chart shows eleven standard shades in a representation of textured finish achieved. (8 pp.)
AIA FILE NOS. 3-B-1, 25-B-25, 25-B-30, 25-C-2
MFR: SONNEBORN CHEMICAL AND REFINING CORP.
Circle 323 for further information

DOOR TOP PROTECTORS

A catalog supplement describes and illustrates the *Zero* interlocking water sheds and extended rain drips for protection against water seepage. The twin seal door saddle for sound insulation and a light and soundproofing seal for extra heavy industrial doors are also shown. The units are designed for use with out-opening doors in curtain wall construction and metal doors with transoms. (1 p.)
AIA FILE NO. 35-P-6
MFR: ZERO WEATHER STRIPPING CO., INC.
Circle 324 for further information

POLYETHYLENE FILM

Illustrated booklet describes various uses of polyethylene film in building trades. Included are specifications for film as water vapor barrier under slabs, in crawl spaces, on flooring, subflooring, warm side of walls, ceilings, and concealed flashing. Also use of film for protective enclosures in cold weather, and as material and equipment covers is illustrated. Its qualities as concrete curing blanket are explained. (8 pp.)
AIA FILE NO. 24-D
MFR: VISKING CO., DIV., UNION CARBIDE CORP.
Circle 325 for further information

WEATHERPROOFING

Flexible *Resto-Crete*, weatherproofing coating for concrete and masonry, is described in current folder. When applied to exterior surfaces, material forms effective barrier against water penetration, yet its controlled porosity permits interior water vapor to escape, mfr states. Because of its flexibility, it will not rupture under expansion and contraction of surface to which it is applied. Folder contains several illustrations of buildings waterproofed with product, and detailed information on its properties, wide range of colors available, and specifications. (4 pp.)
AIA FILE NO. 3-B
MFR. WESTERN WATERPROOFING CO.
Circle 326 for further information

DOORS/WINDOWS/HARDWARE

DOOR CONTROLS

Two current brochures describe lines of concealed overhead door control and concealed in floor door control. Included are details for installation and adjustment, specification and ordering information for single acting door control (handed) for metal or glass doors and metal or wood doors; and floor installation.
AIA FILE NO. 27-B
MFR: DOR-O-MATIC, DIV., REPUBLIC INDUSTRIES, INC.
Circle 327 for further information

CUSTOM HARDWARE CATALOG

Catalog of custom hardware featuring a collection of more than 600 handcrafted custom items is now available. Illustrated in full color, catalog contains gold plated lavatory ensembles and accessories, imported lock escutcheons, door levers, cabinet knobs and pulls. $3.50. (116 pp.)
1022 S. La Cienega Blvd., Los Angeles 35, Calif.
AIA FILE NO. 27-B
MFR: DECORAX, LTD.
Write manufacturer directly

SLIDING DOORS & SCREENS

Complete line of steel sliding glass doors and screens announced. Brochure features complete set of illustrated details and elevations of all standard types and sizes of mfr's doors. In addition, brochure contains architect's specifications and suggested installation details. (4 pp.)
AIA FILE NO. 16-E
MFR: CARMEL STEEL PRODUCTS
Circle 328 for further information

STORM-SCREEN SLIDER WINDOW

Literature available describing *Sil-I-Glide* glass panel framing, cantilever beam window frame design, and tubular vinyl insulation. Illustrations show different versions of window for full slider or partial slider prime windows and for slider picture windows. (2 pp.)
AIA FILE NO. 26-A-1
MFR: SEASON-ALL
Circle 329 for further information

LIGHTING

PORTABLE INDUSTRIAL LIGHTING

Bulletin *B76* shows how lamps, extensions, sockets and other unitized assemblies can be connected to form an economical lighting system which is, in effect, custom-tailored to individual lighting requirements. The system is waterproof, safe and durable, since all conductors and lamp bases are encased in tough, resilient Neoprene rubber. Special heat-treated glass gloves are furnished on all vapor-proof lamps. Illustrated bulletin provides information on types, construction details, and varieties of stock components from which individualized portable lighting systems can be assembled. (12 pp.)
AIA FILE NO. 31-F-28
MFR: ELECTRICAL PRODUCTS DIV., JOY MANUFACTURING CO.
Circle 330 for further information

SPORTS LIGHTING BULLETIN

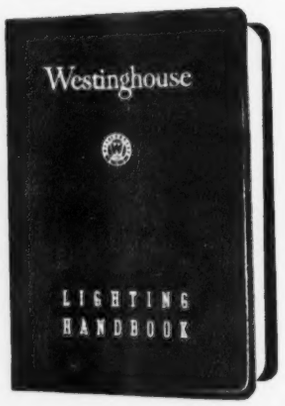
Revised edition of sports lighting bulletin, featuring nearly 100 suggested lighting layouts for sports from archery and badminton through volleyball and wrestling. Bulletin *2721* gives general information and application data, with recommendations for types of floodlights best suited for each application. Illustrated with photos and installation drawings. (1 p.)
AIA FILE NO. 31-F-30
MFR: CROUSE-HINDS CO.
Circle 331 for further information

LIGHTING FIXTURES

Series of ceiling mounted and wall mounted lighting fixtures are described in brochure No. *R-160*. Fixtures are stated to be functionally styled to meet today's demands for effective lighting and incorporate spun plastic shades and globes for effective light diffusion. Fixtures have residential as well as office, general commercial and institutional applications. (4 pp.)
AIA FILE NO. 31-F-21
MFR: RODISCO, INC.
Circle 332 for further information

MERCURY LUMINAIRE

Bulletin *GEA-7210* describes mercury luminaire for residential lighting. Includes discussion of mercury lighting advantages, description of radical refractor lens design, easy lighting layouts with application data and ordering information. Photos include cutaway view of new luminaire, applications and dimension drawings. (10 pp.)
AIA FILE NO. 31-F-26
MFR: GENERAL ELECTRIC CO.
Circle 333 for further information



LIGHTING HANDBOOK

Revised edition contains comprehensive coverage of the general field of

A simple explanation of "ELECTRIONIC" CONTROL

written for:
ARCHITECTS
ENGINEERS
CONTRACTORS

Barber-Colman *Electrionic* (electric plus electronic) control for heating, ventilating, and air conditioning systems utilizes the speed, reliability, and accuracy of electrical power. For the largest or smallest jobs, it's instantaneously responsive — simpler than a radio — more dependable than an electric clock. Send for this 24-page handbook—learn how modern *Electrionic* control works, why it is so accurate, reliable, and easy to maintain. Basic principles clearly explained — graphically illustrated — in a simple, step-by-step manner.
Just call your local Barber-Colman Automatic Controls office or write:

BARBER COLMAN

BARBER-COLMAN COMPANY
Dept. K, 13124 Rock St., Rockford, Ill.
Circle 138 for further information

THANKS,

. . . to you our loyal readers for your intense readership of A/E News—and, of course, readership being the key to advertising value, we find this has been reflected in advertising volume. A/E News is showing an increase in advertising of over 250 pages in 1960, while all other architectural magazines are below 1959 levels.

We are pleased that you, the readers in the specialized editorial content of A/E News, find considerable value of the magazine. And, we welcome your suggestions as to how we can make it more valuable to you.

THE PUBLISHERS

LITERATURE

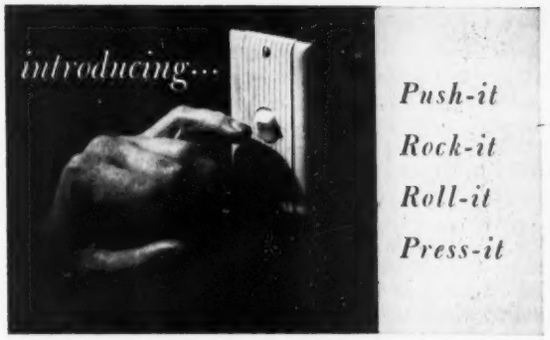
modern lighting practices, according to mfr. Included in pocket-size manual is fold-out page in full color of the electro-magnetic spectrum, information on distribution and light measurements, section on newest light sources, information on coefficients of utilization and maintenance factors, together with footcandle tables, and many application illustrations useful in dealing with modern lighting problems. Major revisions have been made to chapters on flood-lighting design, roadway lighting and sign lighting. Also, most recent recommendations of Illuminating Engineering Society for commercial and industrial interiors are included. In addition, manual contains chapters on interior wiring, school and office lighting, industrial and architectural lighting, germicidal and sun lamps, and cost of lighting. Price, $3.00 prepaid. (250 pp.)
AIA FILE NO. 31-F-1
MFR: LAMP DIV., WESTINGHOUSE ELECTRIC CORP., BLOOMFIELD, N. J.
Write manufacturer directly

FLUORESCENT UNITS

Illustrated bulletin describes a series of very high output fluorescent fixtures for both industrial and commercial uses. The development of *VHO* and other high intensity fluorescent lamps is stated to make it possible to deliver up to two-and-one-half times the light output from standard fixtures designed for lamps of the same length. Units are illustrated, specified and ratings are given. (4 pp.)
AIA FILE NO. 31-F-2
MFR: SYLVANIA FIXTURE DIV.
Circle 334 for further information

FLUORESCENT LIGHTING

Catalog covers commercial fluorescent lighting equipment and features



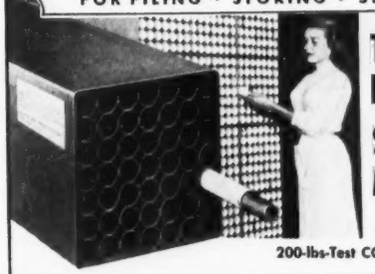
THE ALL-NEW
P&S ROCKER-GLO SWITCH

. . . the switch that *looks* right, *feels* right and *is* right for every type of wiring job.

Here is the one switch with the most wanted features on the market today.
The merest touch causes instant, silent action . . . and Rocker-Glo glows in the dark.
Available in Despard and narrow rocker types.
Write for brochure, Dept. AE-116

P&S PASS & SEYMOUR, INC.
SYRACUSE 9, NEW YORK
60 E. 42nd St., New York 17, N.Y. 1440 N. Pulaski Rd., Chicago 51, Ill. In Canada: Renfrew Electric Co., Ltd., Toronto, Ontario
Circle 139 for further information

MULTIROLL FILES
FOR FILING · STORING · SEGREGATING



TRACINGS
BLUE PRINTS
SHEET MATERIAL
FILE CONSTRUCTED IN 200-lbs-Test CORRUGATED CONTAINER

Depth	11¼"	22¼"	30½"	36½"	42¼"
49 Tube Model 1¾" I.D.	49AB $7.50	49CD $9.50	4930 $12.80	4936 $13.80	4942 $14.80
25 Tube Model 2¼" I.D.	25AB $7.00	25CD $9.00	2530 $11.80	2536 $12.80	2542 $13.80
	Shipping Weight				
Model 49	8 lbs.	12 lbs.	15 lbs.	18 lbs.	20 lbs.
Model 25	6 lbs.	10 lbs.	13 lbs.	15 lbs.	17 lbs.

Sold in Sets Only— 2 JR36 Per Set

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LITERATURE

all modular sizes and types of plastic and metal diffusers. Available in all modular fixtures is *Nini-Cell* ½" x ½" x ½" cell aluminum louver finished in baked white enamel. All fixtures have complete engineering information, cross sections and dimensional data, and are illustrated with large size photos.
AIA FILE NO. 31-F-23
MFR: NEO-RAY PRODUCTS
Circle 335 for further information

CONCRETE CONSTRUCTION

STADIUMS & AUDITORIUMS

Concreting problems encountered and solved in the construction of 16 stadium and auditorium projects in this country and abroad are explained in Bulletin *MBR-P-12*. Three of the case histories included are: The Dallas Memorial and its unique lightweight roof design, George L. Dahl, Architects & Engineers; the placing of the reinforced concrete dome roof of the Albuquerque Civic Auditorium, Ferguson Stevens & Associates, Architects; and the thin shell concrete roof design at the University of Cincinnati Armory, James E. Allen, Architect & Engineer. (20 pp.)
AIA FILE NO. 4-K
MFR: THE MASTER BUILDERS CO., DIV., AMERICAN-MARIETTA CO.
Circle 336 for further information

CONCRETE CONSTRUCTION

Phillip Johnson's Munson-Williams-Proctor Institute Art Gallery in Utica, N. Y. is the subject of *Concrete Construction Report*. The bulletin is detailed with photographs and text and describes the monolithic arrangement of the four cast-in-place, post-tensioned concrete girders which support the structure's roof and an interior balcony and eliminate all interior columns. Bulletin *P-79* shows how structure was erected and how special concrete was designed, controlled and placed. (4 pp.)
AIA FILE NO. 4
MFR: THE MASTER BUILDERS CO., DIV., AMERICAN-MARIETTA CO.
Circle 337 for further information

LOAD-SPAN CATALOG

Load-span catalog section covering precast concrete roof and floor channels has been prepared. Section covers standard 24" wide channel with nominal 4", 8", and 12" depth. Charts for each size show allowable superimposed loads in pounds per square foot. Each page is illustrated with dimensional drawing of channel cross-section. Formula used in figuring loadings is also included. Load-span tables are third section of master engineering and detailing data being developed for architects and engineers. (4 pp.)
AIA FILE NO. 4-K
MFR: GEORGE RACKLE & SONS CO.
Circle 338 for further information

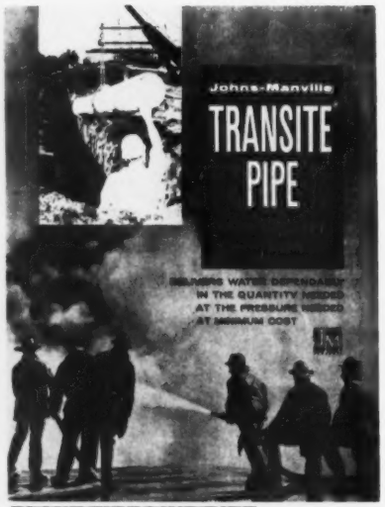
CONCRETE CONSTRUCTION

How the Bishop Drumm Home for the Aged at Des Moines, Iowa, saved six weeks building time in the construction of a fire-proof wing is explained in current folder. This project is an example of high speed construction through the use of precast concrete floor and roof slabs with a poured-in-place structural frame. Photographs and detail drawings show simplicity of structural design. (6 pp.)
AIA FILE NO. 4-K
MFR:THE FLEXICORE CO., INC.
Circle 339 for further information

FIRE PROTECTION

VERMICULITE FIREPROOFING

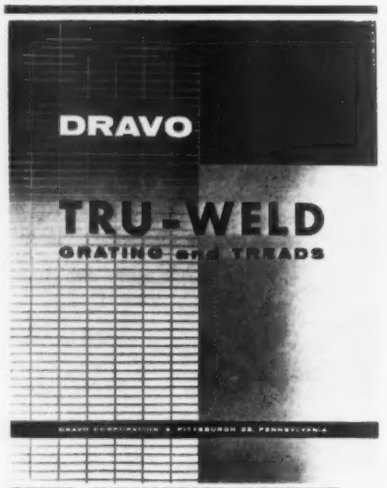
Direct-to-steel vermiculite Type-MK fireproofing is covered by current specifications and technical data sheet. This mill-mixed material is designed specifically for fireproofing steel floors, roofs and beams by machine. Since the product has a set, application can be completed immediately without delays caused by periods of curing between coats. No primer or adhesive on steel is needed.
AIA FILE NO. 25-C-3
ASSN: VERMICULITE INSTITUTE
Circle 340 for further information



PLANT FIRE LINE PIPE

The advantages of asbestos-cement *Transite* pipe for fire protection systems in industrial plants are described and illustrated in current brochure *TR-253A*. Booklet describes in detail performance properties, relating them to dependable protection and to savings in cost and installation. Also included are illustrations of typical arrangement of plant fire protection system from tank or well to connections to building supply and hydrants, including correct location of fittings and outlets. In addition, booklet contains complete design data with suggested procedure for laying out a loop, anchoring fire mains and testing fire lines. Guide specification is included. (8 pp.)
AIA FILE NO. 29-B-61
MFR: JOHNS-MANVILLE CORP.
Circle 341 for further information

MISCELLANY



STEEL INDUSTRIAL GRATING

Characteristics of steel industrial grating and facilities for its manufacture are described in current bulletin No. 1112. *Tru-Weld Grating and Stair Treads*, cites design panel widths and load tables for grating and stair treads with both standard and close spacing. Typical clearances and various types of fasteners used for installation are detailed as are necessary specifications for ordering. Bulletin lists such applications for grating and stair treads as trench drainage systems, machinery floors, conveyor systems, operating floors, power plants, grain and missile silos, operative machinery, refinery plants, tank walkways and stairs, river locks and dams, sewer systems, and sinter and pelletizing plants. (12 pp.)
AIA FILE NO. 14-A-1
MFR: DRAVO CORP.
Circle 342 for further information

TERRAZZO FLOORING

Terrabond terrazzo flooring, consisting of Portland cement terrazzo bonded with *Terrabond* adhesive, is subject of current brochure. Mfr states that *Terrabond* process terrazzo topping offers these advantages: costs 25-35 per cent less than highest grade resilient flooring; weighs approximately five times less than conventional terrazzo topping; eliminates scratch coats; reduces total installed thickness of genuine Portland cement terrazzo to as little as ⅜". Full installation and specification information included. (12 pp.)
AIA FILE NO. 24-A
MFR: THIOKOL CHEMICAL CORP.
Circle 343 for further information

STORE FIXTURES

Store fixtures catalog *No. 95* highlights color anodized aluminum fixtures; stainless steel fittings, uprights, bases and sign frames, and "extruded" coat and hat hooks. Fixtures are available in baked enamel on steel and in bronze or brass as well as color anodized aluminum and stainless steel. Of special interest are knockdown garment racks in which all fastenings are hidden from view; moveable double hangrod units featuring knock-down construction; typical skirt and/or slack rack frames, available assembled or knockdown construction; fluorescent or incandescent illuminated island display fixtures featuring circular display frame with three glass or wood shelves. (36 pp.)
AIA FILE NO. 35-H-5
MFR: MORRIS KURTZON, INC.
Circle 344 for further information

SPRAY NOZZLES

Data file on decorative fountain spray nozzles now available. Bulletin describes full line of nozzles: hollow-cone, solid-cone, and flat-sheet spray nozzles; jet nozzles; adjustable nozzles; and mushroom spray nozzles. Complete specifications are given for each type, including sizes, capacities, and spray characteristics. Special section illustrates typical applications with detailed drawings of spray effect of various types of nozzles, including dimensions of spray height, diameter, cone, etc.
AIA FILE NO. 38-G
MFR: SCHUTTE AND KOERTING CO.
Circle 345 for further information

HOT WATER DISPENSER

Spec sheet covers both models of *Instant Hot* water dispenser which makes water instantly available at 190°-200° F for thawing frozen foods, preparing meals, making coffee, hot or iced tea, soup or instant foods. Model N-31 is for sink or counter mounting. When installed, only goose-neck assembly is visible. Model N-32 is for exterior mounting on office or factory water coolers, walls, cabinets, etc. (2 pp.)
AIA FILE NO. 29-D-2
MFR: NATIONAL DISPOSER
Circle 346 for further information

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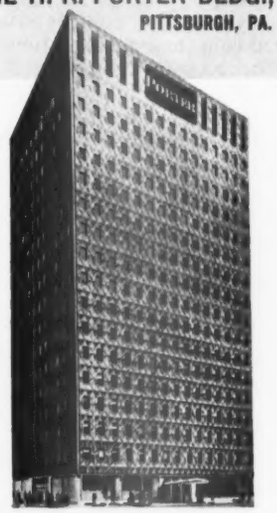

Reflecting the fast-growing acceptance, by leading architects and builders, of Perlite Insulating Concrete, is the modern H. K. Porter Building . . . one of Pittsburgh's newest skyscrapers. The pleasing appearance of the metal "skin" panels has the advantage of fire safety, lightweight strength and durability provided by Perlite Insulating Concrete backup.

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DIGEST:23

PROPOSED ALL WEATHER COMFORT STANDARD FOR ELECTRICALLY HEATED AND AIR-CONDITIONED HOMES

The following proposed standard was presented by Paul W. Emler, Vice President of the American Electric Power Service Corp., N. Y., N. Y. at the First National Electric House Heating Exposition, held in March 1960, in Chicago. It is based on the work of a representative committee of technical people from insulation, glass, and electric heating equipment manufacturers. At the present time there is no official sponsor for the proposed standard, but it is being circulated to representative companies for acceptance.

INTRODUCTION

It is our assumption that millions of electrically heated and air-conditioned homes will be built during the next few years. And good insulation is the key to good electrically heated homes. Insulation is, of course, not new and neither are insulation recommendations for electrically heated homes.

We are all familiar with 6-4-2: 6" of insulation over the ceiling, 4" in side-walls, and 2" under the floor. However, 6-4-2 has never been a standard. It has been recommended by some of the manufacturers of electric heating equipment. Modifications of the formula have been recommended by associations like the National Wool Assn., by the Rural Electrification Administration, and by many of the electric utilities interested in promoting electric heating. But 6-4-2 has had disadvantages: 6-4-2 of what? Different insulating materials have different thermal characteristics. It may take 5" of one material to be equivalent to 3" of another. Therefore, 6-4-2 is not a performance specification. There also have been construction problems. Four inches of side-wall insulation, or perhaps more accurately 3⅝", automatically eliminates some types of prefabricated structures with 2" side-wall panels. It may not always be necessary to eliminate these for electric heating. A third disadvantage or problem with 6-4-2 is that the insulation required in an electrically heated and air-conditioned house in New England or Minnesota or Montana may be quite different than that required, or that can be justified from an economic standpoint in Florida, the Gulf Coast or Southern California.

All of these factors—first the importance of good insulation and then the lack of an adequate standard—were recognized some time ago by the insulation manufacturers, the builders and the electric utilities. As a matter of fact, several of the electric utilities had developed their own insulation standards, to be used in electrically heated homes in their service areas.

PROPOSED STANDARD

Recommended standard for insulating, ventilating, shading and relating factors for improved comfort and economy for electrically heated and air-conditioned homes.

Purpose

To encourage good insulation practice so the owner will benefit from:

1. Lower first cost of both heating and cooling equipment.
2. Lower operating cost for both heating and cooling.
3. Greater comfort for the occupants during both the heating and cooling seasons.

Objectives

To establish:

1. Recommended thermal performance values for electrically heated homes.
2. Recommended maximum summer heat gain for air-conditioned homes.
3. Responsibility for insulation quality and application.

Recommended thermal performance values

When based on an infiltration rate of one air change per hour, the heat loss values in Table I which are expressed in Btuh per sq. ft. of floor area of the space to be heated to the comfort level, measured to the outside of exterior wall, will generally be achieved with the thermal performance values recommended in Table II.

Table I—Recommended Heat Loss Values

Degree days	Btuh/sq.ft.	Watthr/sq.ft.
Over 8,000	40	11.7
7,001 to 8,000	38	11.3
6,001 to 7,000	35	10.3
5,001 to 6,000	32	9.4
3,001 to 5,000	30	8.8
Under 3,001	28	8.2

TABLE II—Thermal Performance Values

(As calculated in accordance with the method described in the current ASHRAE Guide, before correction for framing.)

Building Section	U Value, btu(hr) (sq.ft.) (F)
Ceiling	0.05
Frame Walls	0.07
Masonry Walls	0.12
Floor over vented spaces	0.07
Floor over unheated basements	0.09
Slab edge heat loss per linear foot, 30 Btuh	

These values may need improvement in severe climates, when ceiling heat is used or when glass areas constitute a larger percentage of gross wall area than provided for in the establishment of the values. Weatherstripping, double glazing and storm doors should be used as required to meet the values in Table I and for comfort and operating economy. It is recommended that infiltration, natural and mechanical ventilation, vapor barrier and slab on grade heat loss considerations be guided by the excerpts contained in the Appendix. It is recommended that sections between regularly and periodically heated spaces be insulated when the temperature difference between them is expected to be more than 20°F. It is recommended that fireplaces be provided with tight fitting dampers.

Maximum summer heat gain

It is recommended that the total calculated heat gain

DIGEST:23

to all space to be cooled to the comfort level not exceed 25 Btuh per sq. ft. of floor area of this space, measured to the outside of exterior walls, when calculated from the data contained in the current *ASHRAE Guide*. It is recommended that consideration be given to shading glass areas by natural or mechanical means in order to minimize sun effect. The recommended maximum heat gain value can generally be achieved with the performance values recommended in Table II when consideration is given to shading of glass areas.

Insulation quality and application

The insulation manufacturer shall be responsible for the quality of material and when required shall certify to its performance when installed in accordance with his application standards.

The insulation applicator shall be responsible for installing the material in accordance with the manufacturer's recommendations and shall so certify when required.

APPENDIX

Infiltration heat loss

Quoted from FHA Technical Circular No. 7, Revised August, 1959, "Heat Loss Calculations." "One air change per hour may be assumed a reasonable average for estimating the infiltration heat loss. Infiltration values calculated on the basis of the "crack method" are considered acceptable, provided the result is not less than the equivalent of ½ air change per hour.

Ventilation of structural spaces

(Abstracted from FHA No. 300, Minimum Property Standards, including General Revision No. 1)

Objective: To provide natural ventilation of spaces such as attics and basementless spaces to minimize the effect of conditions conducive to decay and deterioration of the structure and to reduce attic heat in the summer.

General: Net free area of an opening is the total unobstructed area through which air can pass.

Basementless spaces (crawl spaces): At least four foundation wall ventilators shall be provided, one located close to each corner of the space, having an aggregate net free ventilating area not less than 1/150 of the area of the basementless spaces; or

Ground surface treatment shall be provided in the form of a vapor barrier material plus at least two foundation wall ventilators having an aggregate net free ventilating area not less than 1/1,500 of the area of the basementless space.

Attics and spaces between roofs and top floor ceilings: Provide cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow.

Ratio of total net free ventilating area to area of ceiling shall be not less than 1/150, except that ratio may be 1/300 provided:

a. A vapor barrier having a transmission rate not exceeding one perm is installed on the warm side of the ceiling; or
b. At least 50 per cent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated (at least 3'-0" above eave or cornice vents) with the balance of the required ventilation provided by eave or cornice vents.

Mechanical ventilation

Objective: To provide mechanical ventilation for bathrooms and kitchens not ventilated by natural means.

Bathrooms: Fan should have sufficient capacity to provide a minimum of 12 air changes per hour.

Kitchens: Fans shall have sufficient capacity to provide a minimum of 15 air changes per hour in the area occupied by the kitchen.

Vapor barriers

Walls: A vapor barrier shall be installed on the warm side of the walls when the U value of the wall is numerically less than 0.25.

Ceilings: Install on warm side of ceiling when a vapor barrier is provided.

Roof deck: When roof deck material is also the finished ceiling, a vapor barrier having a vapor permeance of not more than ½ perm shall be installed near the warm side of the construction in areas having a design temperature of 10°F or lower.

Concrete slabs and basementless spaces: Maximum vapor permeance shall not exceed ½ perm for vapor barrier under concrete slabs and 1 perm for ground cover in crawl spaces.

Slab on grade heat loss: Calculations of heat loss through concrete slab floors shall be made using the following formula:

H = F x P
H = heat loss of the floor, Btuh
F = heat loss coefficient, Btuh (Linear foot of exposed edge) from Table 10-1
P = perimeter or exposed edge of the floor, linear feet

Table 10-1 Slab Edge Heat Loss Factors

Heat loss per foot of exposed slab edge, Btuh

Outdoor design temperature (Degrees F)	Total width of insulation (inches)	Value of F for unheated slab R=5.0	R=3.33	R=2.50	Value of F for heated slab R=5.0	R=3.33	R=2.50
−30 and colder	24	34	51	67	46	69	92
−25 to −29	24	32	48	64	44	66	88
−20 to −24	24	30	45	60	41	61	82
−15 to −19	24	28	43	57	39	59	78
−10 to −14	24	27	40	54	37	55	74
−5 to −9	24	25	38	51	35	52	70
0 to −4	24	24	36	48	32	48	64
+5 to +1	24	22	33	44	30	45	60
+10 to +6	12	21	31	42	25	38	50
+15 to +11	12	21	31	42	25	38	50
+20 to +16	edge only	21	31	42	25	38	50

R=Thermal Resistance of Insulation

Use F=40 for unheated slabs or F=75 for heated slabs, if perimeter insulation is not used

BOOKS

An Investigation of The Small House *published by the School of Architecture, Pratt Institute, Brooklyn, New York. 72 pages measuring 9" x 17". Profusely illustrated. Price: $2.00*

This charmingly illustrated book, complete with many cartoons, diagrams, sections, sketches, graphs and charts, has been authoritatively prepared by the graduate students and faculty members of the School of Architecture of Pratt Institute, Brooklyn, N. Y. The material presented is in three main sections: Part I: *The Function Makes the Plan;* Part II: *Small House Structure;* and Part III: *Mechanical Equipment.* Area uses, design criteria and related data, functional planning, structural innovations, systems and economies of use of various materials such as steel, concrete, wood, plastics and others are all spelled out in interesting detail. The information is given in such a way as to interest the practicing architect as a form of "refresher" of the various planning, design and technological factors that enter into the creation of the contemporary small house. But the book has a much more interesting value. It is written in such a manner that it could be presented as a gift or reference to one's prospective client—or to any layman who is considering building. The book, itself, illustrates in an amusingly stated, easy-to-grasp treatment, concepts and examples of the complexities of house planning and the architect's role in the process. It is available from Pratt Institute's School of Architecture in Brooklyn for the low price of $2.00. This modest price alone does not begin to reflect the extent of the valuable information that it contains. It is our suggestion that it would make a most invaluable reference and a most welcome Christmas gift for someone. Inquiries should be addressed to Dean Olindo Grossi, AIA at Pratt Institute. *JJC*

Construction Estimates and Costs, *Third Edition, by H. E. Pulver, C.E. New York, McGraw-Hill Book Co., Inc., 1960. 640 pp., illus. $12.00.*

How to estimate the cost of light or heavy construction is covered in detail in the newly revised version of this standard in use for the past 20 years. Various aspects of construction work, such as handling and transporting materials, excavation,

(Continued on page 57)

NAMES

Edmund R. Purves, FAIA, (right) Executive Director of AIA congratulates his successor, William H. Scheick, AIA.

Edmund Randolph Purves, FAIA, and William H. Scheick, AIA

Edmund Randolph Purves, FAIA, Executive Director of The American Institute of Architects since 1949 and a member of the Institute staff since 1941, has resigned as staff chief of the national professional society effective December 31. He will be succeeded by William H. Scheick, AIA, vice-president of the Timber Engineering Co., and former Executive Director of the Building Research Institute, National Academy of Sciences. The resignation and appointment occurred at a September 30 meeting of the AIA Board of Directors in Las Vegas. Mr. Purves' contract as Executive Director expires at the end of 1960 and he had notified the Board more than a year ago that he wished to leave the post no later than January, 1962. A search for a successor was instituted by the Board at that time. Between November 15, when he joins the Institute staff, and January 1, 1961, Mr. Scheick will hold the title of Managing Director.

AIA President Philip Will, Jr., FAIA, announced that, notwithstanding the resignation, "the Board has prevailed upon Mr. Purves to accept a new contract for 1961 in which he will bear the title of Consulting Director and discharge an assignment which needs his demonstrated leadership, wisdom, and great prestige." "We fully respect Ned Purves' wish to relinquish his Institute duties by 1962," Mr. Will said, "and we do not wish to unduly burden a man who stands unique in our profession for the contributions he has made to America's architects and their professional society. At the same time, the Board felt that perhaps we could ask one more substantial favor from Mr. Purves and we were most delighted that he accepted a further one-year assignment."

During 1961, Mr. Will disclosed, Mr. Purves has agreed to advise the new Executive Director on a continuing basis, to tour AIA regions to strengthen communication between Octagon headquarters and the profession in the field, and to represent the Institute abroad in international professional conferences, "an area of professional participation in which we have been embarrassingly weak."

"Accordingly," he said, "we are in a doubly fortunate position. We not only find ourselves able to retain the services of Edmund Purves, but we have a bright new star in William Scheick. We had despaired of finding a successor of comparable stature to the present Executive Director. We are happy to say that we now have one." Mr. Will declared that Mr. Purves, in his 30 years' participation in AIA affairs, "has created a record of service and accomplishment which will stand alone in the history of the professional society."

"Many people, of course, have devoted themselves conscientiously and well to the affairs of the profession and the public it serves," Mr. Will said. "I have the honor at this time to serve the AIA as its President. However, presidents come and go, as do other officers and committee chairmen on all levels of professional activity. We look to the Executive Director for the knowledge, leadership, and judgment which give us direction and purpose. In Edmund Purves, we found all of these qualities. When he joined the Institute headquarters staff in 1941, we had a membership of 3,000, lacked any form of contact with the Federal government, and enjoyed little or no recognition as a profession with a service of high value to the community. Today, we number nearly 14,000 members, have 131 chapters and 12 state societies, maintain effective and widespread liaison with the government, business community, and building industry, and hold a prestige second to no other profession. In large measure, we look to Mr. Purves as the source of this strength and vitality.

"It is for these reasons, which also include our genuine personal devotion to the man himself, that we are very happy to be able to depend on him for still another, if shorter, period of distinguished service," Mr. Will said.

Mr. Purves, born in Philadelphia on June 20, 1897, attended the University of Pennsylvania. He interrupted his architectural studies in 1917 to join the American Field Service of the French Army, later transferring to the A.E.F. His service in six major engagements was recognized by the *Croix de Guerre* with Silver Star and other decorations. Returning to the university at the close of World War I, he was awarded a Bachelor of Science degree in Architecture in 1920. In the same year, he was a finalist in the Paris Prize design competition. After a period of study and travel abroad, Mr. Purves began architectural practice in Philadelphia in 1927. He became a member of the Institute in 1930. From 1936 to 1938, he served as President of the Pennsylvania Society of Architects. From 1938 to 1941, he was a member of the national AIA Board of Directors. He became Washington Representative for the AIA in 1941, leaving the following year to join the Seventh Air Force in the Pacific as Chief of Counter-Intelligence. During 1944, in his absence, he was named as a Fellow of AIA. In 1945, Mr. Purves resumed his post as Washington Representative. A year later, he was appointed as Director of Public and Professional Relations, assuming the post of Executive Director in 1949. He is an honorary member of the Royal Institute of British Architects; an honorary corresponding member of the Royal Architects' Institute of Canada; holds the AIA's coveted Kemper Award and special commendations from the HHFA and the U. S. Atomic Energy Commission—the latter for his service on the AEC's Advisory Board on Contract Appeals—and has served on the Committee on Economic Policy of the U. S. Chamber of Commerce.

Mr. Purves and his wife, Mary Carroll Spencer Purves, live at 1524 Thirtieth St., NW, Washington, D.C. They have two sons, Edmund Spencer, and Alan Carroll.

William H. Scheick was born September 18, 1905, in Uniontown, Pa. He was awarded the degree of Bachelor of Architecture from Carnegie Institute of Technology in 1928, winning the AIA School Medal upon graduation. He took the degree of Master of Science in Architecture in 1937 from the University of Illinois, winning the Warren Prize in 1931 and becoming the LeBrun Scholar of 1932. Mr. Scheick served as Assistant Professor of Architecture at Oklahoma A&M College, 1929-1930. In 1930, he began teaching architectural design as an Associate at the University of Illinois and continued teaching until 1944 as Associate Professor. Between 1935 and 1942, he practiced architecture in the residential field.

Mr. Scheick served as Director of the Small Homes Council and Professor of Architecture for the Universtiy of Illinois from 1944 to 1949. In 1949, he became the first Executive Director of the Building Research Advisory Board of the National Academy of Sciences. In 1951, he became the first Executive Director of the Building Research Institute when it was formed as a membership society for research-minded organizations and individuals of the building industry. From 1958 until the present time, Mr. Scheick has held the post of Vice-President in charge of Research and Development for the Timber Engineering Co., a research affiliate of the National Lumber Manufacturers Assn. He has served as a consultant to Parents' Magazine Family Home Department for ten years; initiated the Small Homes Council Publication series and the publication programs of the Building Research Advisory Board and the Building Research Institute; has served as Secretary to the City Planning Council of Champaign-Urbana, Ill., and the University of Illinois, and has been lecturer on house construction since 1951 for the Stonier Graduate School of Banking at Rutgers University under a program conducted by the American Bankers Assn. Mr. Scheick is a member of the Washington-Metropolitan Chapter, AIA. Mr. Scheick and his wife, Violet Johnson Scheick, have three sons, John Theodore, William, Jr., and Thomas Andrew. The couple lives at 1214 Highland Drive, Silver Spring, Md.

DRAFTING TRENDS

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EDITORIAL

ONCE OVER LIGHTLY

PURVES/SCHEICK: We would like to call the reader's attention to the news recently issued by the *Octagon* office of the AIA in which William H. Scheick, AIA, has been appointed successor to Edmund R. Purves, FAIA, as AIA Executive Director. Mr. Purves announced his active retirement from that position, although he will continue to serve as a Consulting Director for the coming year. We wish to express our regret at Mr. Purves' resignation. Under his aegis, the AIA has grown both in influence and membership. His example will present a unique challenge to William H. Scheick in fulfilling his new duties. A fuller account of this news is given in the *A/E News* and *Names* columns of this issue. However, we are taking this moment to convey to each of these gentlemen our best wishes in all of their future endeavors.

Exhibits & motivation: It is stated that architectural students have little time to visit art galleries, therefore, the art galleries will come to them, according to Dean Charles R. Colbert of the *Columbia University's School of Architecture.*

In collaboration with leading New York galleries, monthly exhibitions illustrating current trends in art will be shown on the fourth and fifth floors of Columbia's Avery Hall. "It is important," said Professor Percival Goodman of the architectural faculty, "for the student of architceture to keep in contact with developments in other visual art disciplines. The purpose of the exhibitions is to confront our aspiring architects with the question of whether the arts can still be successfully integrated in architecture and whether they should be."

We agree with Professor Goodman that the student of architecture should keep in contact with development in the plastic arts. However, we are at a loss to quite understand this succumbing to the ever-increasing and more prevalent tendency to *pre-digest* every experience—including that of self-realization in the world of aesthetics. We believe, that Columbia's students, among others, dwell within a figurative stone's throw from hundreds of galleries—including that treasure house of this continent—the Metropolitan Museum of Art. Couldn't the students be motivated and imbued with *a love of discovery* to seek out the arts themselves? Or is this what the preparatory schools should have done and failed to do? Students could be taught how to *emotionally invest* some of their time—and gain those meaningful, psychic dividends of an awakening—an aesthetic response to life. If the pursuit of the muse is made completely effortless—the tendency is to place little or no real *emotional* value on the experience. Far be it from us to cast dust upon the hems of the academicians—we think the idea of the localized exhibit of this nature is an excellent one—but the wrong reason has been cited. The reason should be more dynamic—more impelling—more challenging: a smattering of that incredible ignorance and wall of apathy that seems to surround many a contemporary student from the vital forces in the arts astir today. Incidentally, the lead-off exhibit appears to be a worthy one: paintings and sculpture from the Betty Parson's Gallery on East 57th St. and a display of graphic arts prepared by I. M. Pei and Associates, New York architects and designers.

Only in America! The ground breaking ceremony has become a big-business item in itself. One enterprising manufacturer announces the production of *gold-plated* shovels. The manufacturer cautions that this item is *not* for the man who has everything! The shovel's blade, the D-handle, and even the retainer band on the handle grip are all heavily gold plated. Each tool, of excellent workmanship and finish, is suitable for engraving by one's local Tiffany shop and for framing or mounting for presentation after the ground-breaking ceremonial occasion. The line forms on the right and they are available from The Wood Shovel and Tool Co., Piqua, Ohio. After all, what *is*, a ground-breaking ceremony without a shovel —a gold-plated one—that is? *JJC*

BOOKS

(Continued from page 54)

piling and bracing, concrete, masonry, wood work, structural steel, roofing, heating and air-conditioning, plumbing, electrical work, lathing and plastering, painting, etc., are covered in considerable detail. Each phase of construction work is presented separately, and simple arithmetical methods for accurately estimating costs are described and illustrated. Every step of the work is covered—from preliminary investigation through approximate estimates, to complete, detailed estimates that include overhead; materials, labor, and equipment costs; and profit.

Soils and Soil Engineering *by Reuben H. Karol. Englewood, N. J.: Prentice-Hall, Inc., 1960. 194 pp., $11.65.*

Includes basic original material on soil stabilization by chemical grouting. Covers field sampling methods, techniques and matters of equipment. Works out actual problems in detail to illustrate current theories and clarify the meaning of empirical data and describes the application of fundamentals to realistic problems commonly encountered.

films

Zinc Controls Corrosion, *produced by American Zinc Institute, available on a loan basis through Modern Talking Picture Service, Inc., 3 E. 54th St., New York, N. Y. Full color, sound, 16 mm., 38 minutes running time.*

Sound Control in Design, *produced by United States Gypsum Co. as part of a film-book program. Intended as a service program for architects, film and books are available through U. S. Gypsum's Architect Service representatives for AIA chapter meetings and private presentations to large architectural firms. For further information, contact M. P. Reed, Publicity Manager, U. S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill. Color, running time 28 minutes.* The film sets forth the problems of noise and the need for its control. The 91-page book is offered in conjunction with film showing. It was written with the cooperation of Bolt, Beranek & Newman, Acoustical Engineers. It discusses how common acoustical problems can be overcome with integrated design, and how new materials and better methods of using existing knowledge of acoustics may solve them in the future.

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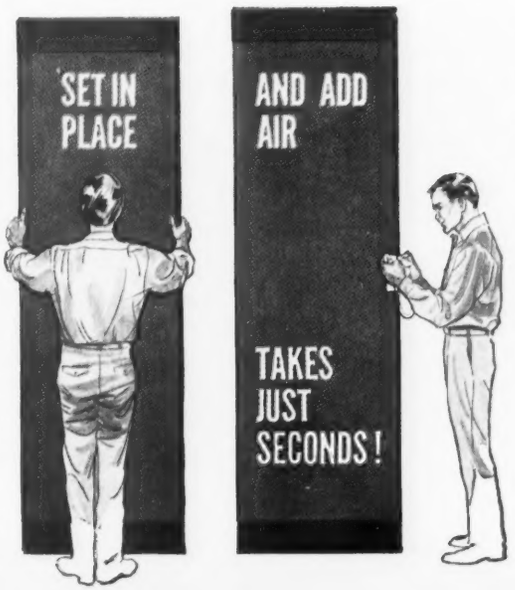

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15-17 BUILDING RESEARCH INSTITUTE: 1960 fall conference on preassembled components, Shoreham Hotel, Washington, D. C.

16 ARCHITECTURAL LEAGUE OF NEW YORK: exhibit — new dimensions in architectural photography, through December 14, New York City.

18-22 AIR-CONDITIONING AND REFRIGERATION INSTITUTE: 1960 annual meeting, Hollywood Beach, Fla.

27 AMERICAN SOCIETY OF MECHANICAL ENGINEERS: winter annual meeting, through Dec. 2, Statler-Hilton Hotel, New York City.

28-30 AMERICAN SOCIETY OF REFRIGERATING ENGINEERS: semi-annual meeting, Chase Park Plaza Hotel, St. Louis, Mo.

Dec. 12-15 INDUSTRIAL BUILDING EXPOSITION & CONGRESS: New York Coliseum, New York City.

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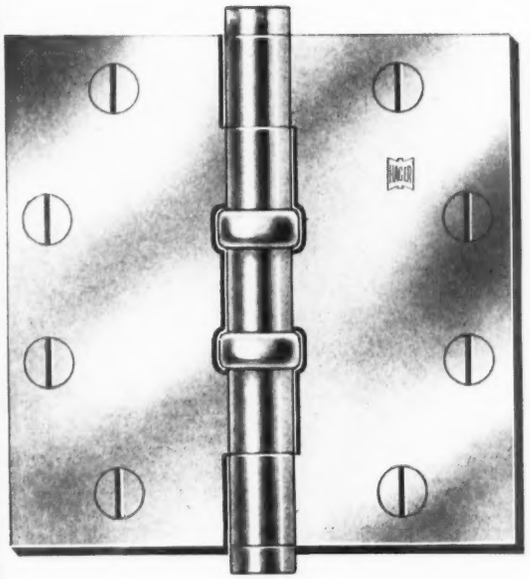

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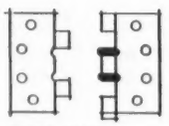

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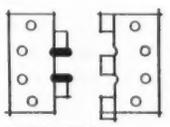

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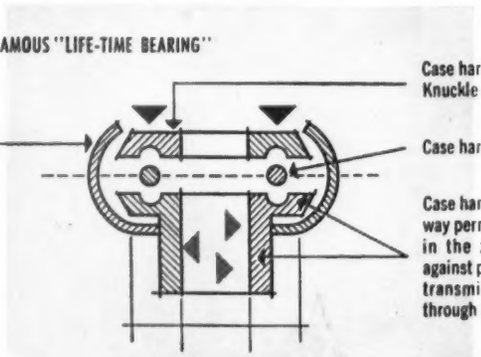
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